

# **Investing in Asian frontier markets: is the risk worth the return?**

**Bachelor Project submitted for the degree of  
Bachelor of Science HES in International Business Management**

by

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## **Declaration**

This Bachelor Project is submitted as part of the final examination requirements of the Haute école de gestion de Genève, for the Bachelor of Science HES-SO in International Business Management.

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Geneva, June 4<sup>th</sup> 2018

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## Executive Summary

Investors are paying increasing attention to frontier markets, as they present the advantage of high returns with potentially diminishing risks in the future and attractive correlation characteristics as globalization unfolds. As the growth of China has slowed down in the past few years, Asian frontier markets are the countries investors turn to expecting rapid economic growth. However, these countries are at their early stage of development, and thus present higher risks than better-known emerging countries.

The objective of this research is to determine whether it is worth investing today in Asian frontier markets based on historical data from MSCI indices by comparing risks and returns in individual Asian frontier market MSCI indices, and comparing these results with other frontier, emerging and developed markets. This study also takes into account diversification opportunities, since frontier markets investments are often used as a tool for diversifying investment portfolios.

This research has found that in fact, Asian frontier markets do not consistently provide higher return than other frontier markets, or even emerging and developed ones, but do present higher risks. Even though they are expected to follow China and India's track, Asian frontier markets do not outperform the MSCI Frontier Markets Index, the MSCI Emerging Markets Index, nor the MSCI World Index. In addition, the volatility and max drawdowns calculated from MSCI indices for Vietnam, Bangladesh and Sri Lanka are larger than that in other indices. This suggests that it isn't worth investing in Asian frontier markets based on historical data.

However, this study identified reasons for the unexpected outcomes of this analysis. First, this research is based on individual country analysis, and compares with indices that include several countries, which in the case of the MSCI Frontier Markets Index, are very different and uncorrelated to one another, and thus they cancel each other out in the index value. Second, Asian frontier markets are more liquid than other frontier markets, which translates into higher volatility, but doesn't mean risk is higher in Asian frontier countries than in others.

Despite higher volatility and low returns compared to other indices, Asian frontier markets remain a profitable investment for investors that are ready to commit for the long-run and closely monitor their investments, and for those who are interested in their correlation characteristics to diversify an investment portfolio. Asian frontier countries still present high growth prospects, and deserve a particular attention from foreign investors.

# Contents

Investing in Asian frontier markets: is the risk worth the return? .....	1
Declaration.....	ii
Acknowledgements .....	iii
Executive Summary .....	iv
Contents.....	v
List of Tables .....	vi
List of Figures .....	vi
Introduction .....	1
1. Definitions and context .....	3
1.1 Definition of frontier markets .....	3
1.2 Global benchmarks.....	3
1.3 Asian frontier markets .....	5
1.3.1 Bangladesh development and influences .....	6
1.3.2 Sri Lanka development and influences .....	7
1.3.3 Vietnam development and influences .....	8
1.4 Asian frontier markets: risks and challenges .....	9
1.4.1 Bangladesh: specific risks and challenges.....	11
1.4.2 Sri Lanka: specific risks and challenges .....	13
1.4.3 Vietnam: specific risks and challenges .....	14
1.5 Asian frontier markets: opportunities .....	16
2. Analysis .....	18
2.1 Risk-return analysis .....	18
2.2 Methodology .....	18
2.2.1 Risk measures .....	19
2.2.2 Performance measures.....	20
2.3 Results .....	22
2.3.1 Establishment of the risk level .....	23
2.3.2 Establishment of the performance level .....	31
2.3.3 Risk adjusted performance .....	35
2.4 Correlation and diversification potential .....	40
3. Discussions .....	42
3.1 Risks versus returns.....	42
3.2 Recommendations .....	44
Conclusion.....	46
Bibliography .....	47
Appendix 1: Different classifications of frontier countries.....	52
Appendix 2: MSCI Market Classification Criteria .....	53
Appendix 3: Frontier markets total trade volume 2010-2017 .....	54
Appendix 4: Historical LIBOR rate 2010-2017 .....	55

## List of Tables

Table 1 – LIBOR average rates over different periods.....	22
Table 2 – Sharpe ratio table .....	36
Table 3 – Correlation coefficients between the different MSCI indices .....	40

## List of Figures

Figure 1 – MSCI Market Classification .....	4
Figure 2 – Country weights on the MSCI Frontier Markets Asia Index .....	6
Figure 3 – Historical volatility comparison 2010-2016 .....	23
Figure 4 – Annualized volatility comparison .....	24
Figure 5 – Historical volatility of Asian frontier markets' returns 2010-2016 .....	25
Figure 6 – Historical drawdown comparative graph between frontier, emerging and developed markets 2010-2017 .....	27
Figure 7 - Historical drawdown comparison between individual Asian frontier countries and the MSCI Frontier Market Index 2010-2017 .....	28
Figure 8 - Evolution of daily returns over 8 years in MSCI Asian frontier markets' indices in percentage of their initial value as of 01.01.2010.....	31
Figure 9 - Annualized daily returns comparison of individual Asian frontier markets and other relevant indices .....	32
Figure 10 - Evolution of daily returns over 8 years in all indices in percentage of their initial value as of 01.01.2010.....	34
Figure 11 - Sharpe ratio histogram comparison of different indices.....	37

# Introduction

In a world where money is power, investments play a large role in business. The objective of any investment is to use cash that is otherwise sleeping in the bank to foster future capital growth by placing it. There are many different investments vehicles: stocks, bonds, options, futures, mutual funds, real estate, certificates of deposit, foreign exchange market, and exchange traded funds (ETFs). Stocks – also called equity investments – are part of the most volatile, and thus, part of the highest returning investment vehicles. Investors seek for investments that will maximize their return while minimizing the risk, and they often try to measure how the risks compare to the potential return for each potential investment before placing their money.

Globalization has made international trade easier, and as it unfolds, international markets are flourishing and opening new opportunities to businesses and people, attracting the eyes of ambitious investors. Countries formerly considered as poor, under-developed nations are emerging, and expansion can be fast during this phase of development, which results in high growth rates.

People are familiar with emerging countries and their potential in terms of investments, and now that these economies' growth is slowing down, investors are trying to find out which countries are the next China and India. Naturally, they turn to economies that are less developed, smaller and/or less liquid, but still have investment potential: frontier markets.

Many investors believe that Asian frontier markets are more susceptible to follow the track of their neighbors – India and China – than others, due to the higher regional pressure and influence. In October 2014, Olivier Bell, Portfolio Manager in T. Rowe Price, wrote that “China has a large effect on many frontier markets in Asia”, and explains that there is a ‘push’ and a ‘pull’ influence, but the overall effect is that China’s growth and development is favorable for Asian frontier markets.

Although these markets offer high growth prospects, and therefore high potential return on investments, they also present higher risks: macroeconomic management, political regression and corruption risks are to be considered, among many others.

This research will focus on Asian frontier countries classified in the Morgan Stanley Capital International (MSCI) Index – the most commonly used frontier market index – which includes: Vietnam, Bangladesh and Sri Lanka. In order to be classified in a given investment universe such as the MSCI Global Investable Market Indexes, markets must

meet some requirements based on qualitative and quantitative measures, which is why there are only 3 countries to analyze.

This report considers the real risk of investing in each of these 3 frontier countries to come to a conclusion answering the following question: is the risk of investing in Asian frontier markets worth the return? It studies each country individually and compares them, to come to a precise recommendation to investors.

To come to such a conclusion, this research will contain 3 main parts, which will be delimited by each chapter. Chapter 1 offers an overview of frontier markets, including a definition of important terms and a point on index classification. It also describes the context of each country based on a brief historic of its development, the challenges it faces and its current state. Chapter 1 also describes the risks and challenges specific to each Asian frontier country as well as the opportunities that they present.

Chapter 2 starts with introducing the tools used to perform the analysis of the market data collected to measure the risks and performance of Asian frontier markets investments, as well as the risk-return balance. It evaluates the level of risk, the level of performance and the risk-adjusted performance of each Asian frontier market, by comparing with the relevant MSCI indices, such as the MSCI Frontier Markets Index, MSCI Emerging Markets Index and MSCI World Index. This analysis ends with a short study on possible correlations between the 3 analyzed markets and the other main indices for frontier markets in general, emerging and developed markets.

The last chapter reviews and interprets the results of the analysis in Chapter 2, taking into account the context described in Chapter 1, and discusses the worthiness of investing in each of the 3 Asian frontier markets. At the end of the chapter, some recommendations are available for investors who intent to invest in Bangladesh, Sri Lanka and/or Vietnam.



# Chapter 1

## 1. Definitions and context

### 1.1 Definition of frontier markets

There is no universally embraced definition of what constitutes a frontier market. The agreed meaning is that they are markets that are less mature than emerging markets because of characteristics such as demographics, development, politics and liquidity, but they still have investment potential. Thus, we differentiate 3 main types of markets:

- Developed markets : the countries that are the most economically advanced.
- Emerging markets : the countries that are in the process of rapid economic growth and development with less mature capital markets.
- Frontier markets : a subset of emerging markets with little market liquidity and lower economic development, but potential for rapid growth.

Frontier countries tend to have more volatile and less diverse stock markets, and thus they are higher risk investments, but they have high returns potential as well.

These markets are often in their infancy and have attracted attention due to their diversification opportunities and growth potential. Frontier markets equities have become more and more investable, and this asset class is believed to have the potential to become a significant portion of the global equity opportunity set.

### 1.2 Global benchmarks

Before any investment decision, investors like to refer to global benchmarks to measure stock market performance. Because the definition of what constitutes a frontier market is not fixed, classification systems vary widely between indexers and benchmarks. There are 4 main frontier markets indices: MSCI, S&P (Standard and Poor), FTSE (Financial Times Stock Exchange) and Russell.<sup>1</sup>

The most commonly used index is the Morgan Stanley Capital International (MSCI) Frontier Market Index. Under this index, there are criterions that must be met in order

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<sup>1</sup> Appendix 1: Different Classification of Frontier Countries

that a country is classified under a certain category (frontier, emerging or developed), based on the MSCI Market Classification Framework.<sup>2</sup>

Once a country is classified in a category, its classification is reviewed on a timely manner. For instance, Pakistan used to be considered as a frontier market, before it was moved to emerging markets after the June 2017 review, because its characteristics reached the requirements of this category.

MSCI also segments the markets geographically within each category, which leaves us with the following MSCI Market Classification table (Figure 1):

**Figure 1 – MSCI Market Classification**

MSCI ACWI & FRONTIER MARKETS INDEX										
MSCI ACWI INDEX						MSCI EMERGING & FRONTIER MARKETS INDEX				
MSCI WORLD INDEX			MSCI EMERGING MARKETS INDEX			MSCI FRONTIER MARKETS INDEX				
DEVELOPED MARKETS			EMERGING MARKETS			FRONTIER MARKETS				
Americas	Europe & Middle East	Pacific	Americas	Europe, Middle East & Africa	Asia	Americas	Europe & CIS	Africa	Middle East	Asia
Canada United States	Austria Belgium Denmark Finland France Germany Ireland Israel Italy Netherlands Norway Portugal Spain Sweden Switzerland United Kingdom	Australia Hong Kong Japan New Zealand Singapore	Brazil Chile Colombia Mexico Peru	Czech Republic Egypt Greece Hungary Poland Qatar Russia South Africa Turkey United Arab Emirates	China India Indonesia Korea Malaysia Pakistan Philippines Taiwan Thailand	Argentina	Croatia Estonia Lithuania Kazakhstan Romania Serbia Slovenia	Kenya Mauritius Morocco Nigeria Tunisia WAEMU <sup>2</sup>	Bahrain Jordan Kuwait Lebanon Oman	Bangladesh Sri Lanka Vietnam
MSCI STANDALONE MARKET INDEXES <sup>1</sup>										
				Saudi Arabia		Jamaica Panama <sup>3</sup> Trinidad & Tobago	Bosnia Herzegovina Bulgaria Ukraine	Botswana Ghana Zimbabwe	Palestine	

Source: MSCI (2017)

The West African Economic and Monetary Union (WAEMU) including 8 countries – Benin, Burkina Faso, Ivory Coast, Guinea-Bissau, Mali, Niger, Senegal and Togo – the index for frontier markets counts 29 countries in total, which are divided into 5 geographical regions: Americas, Europe & Commonwealth of Independent States (CIS), Africa, Middle East and Asia.

<sup>2</sup> Appendix 2: MSCI Market Classification Criteria

### **1.3 Asian frontier markets**

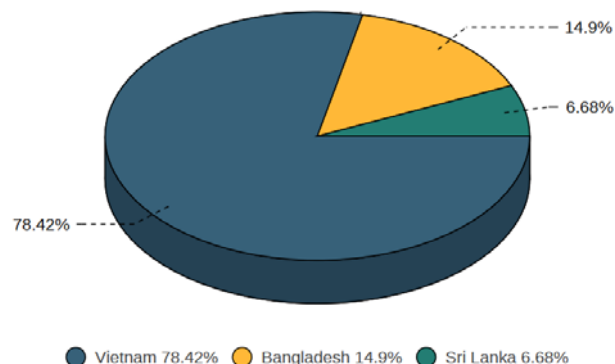
Asia has produced 2 countries that have had a remarkable economic development over the last decades – namely China and India – both of which have lots of influence over other countries in the region. The cultural and geographic proximity of Asian frontier markets to these fast-growing giants makes them more susceptible to follow their track. For instance, the increase of the Chinese and Thai labor and production costs shifts the production facilities of some firms to Asian frontier markets such as Bangladesh or Vietnam. In addition, China has reinforced its relations with South-East Asia by signing the China-ASEAN Free Trade Agreement (CAFTA) in 2005 with the countries of the region, which seeks to strengthen good regional relations and promote exchange and cooperation between China and its neighbors to a new stage. China's success is mainly due to its ability to attract Foreign Direct Investment (FDI) and to the large-scale capital investment on the part of its government. If South-East Asian countries manage to reproduce this, they are likely to follow China's track.

India has a large influence in South Asia due to its historical and cultural relevance, its size and its comparative economic might. However, this region is one of the least economically integrated regions in the world, despite a number of free trade arrangements and cooperation agreements: the South Asian Association for Regional Cooperation (SAARC) agreements, the South Asian Preferential Trading Arrangement, and the South Asian Free Trade Arrangement (SAFTA), have failed to break down trade barriers.

There are 3 Asian frontier markets – Vietnam, Bangladesh and Sri Lanka – all of which are influenced by China and India. Because of this influence, many believe that Asian frontier countries are more likely to become the next fast-growing countries, reproducing the growth of China and India. Therefore, this study will focus on these 3 countries, to evaluate risks and opportunities, and whether they are worth investing in today.

MSCI provides an index for Asian frontier markets called “MSCI Frontier Markets Asia Index”, which presents country weights on its last report dated April 30<sup>th</sup> 2018 as follows:

**Figure 2 – Country weights on the MSCI Frontier Markets Asia Index  
as of April 30<sup>th</sup> 2018**



Source: MSCI Frontier Markets Asia Index USD (2018)

This graph (Figure 2) shows that 78.4% of the value of the MSCI Frontier Markets Asia Index comes from Vietnamese companies as of April 30<sup>th</sup> 2018, against 14.9% from Bangladesh and only 6.68% from Sri Lanka. This suggests that Vietnamese companies either do a lot better than Bangladeshi and Sri Lankan ones (when results are converted in USD), or that they are much more numerous.

The following sections describe the development and influences on Asian frontier countries, to understand the context in which they are evolving.

### **1.3.1 Bangladesh development and influences**

Before going into the specific risks and opportunities to be found in Bangladesh, it is important to understand where the country stands as of today, and therefore, we need to have a look at its development during the last few decades.

In the early 20<sup>th</sup> century, Bangladesh was part of British India, which then broke down into India, West Pakistan and East Pakistan. In 1971, Bangladesh took its independence from Pakistan (the region was the former East Pakistan) after the Bangladesh Liberation War.

Since, the country has made significant progress in its economic sector performance and, especially in the 1990s. Agriculture and garment manufacturing accounts for 90% of Bangladeshi export earnings, and the country relies a lot on these industries. However, due to the global financial crisis of 2012-2013, the demand for low-cost Bangladeshi goods fell sharply.

Today, Bangladesh is still considered as a least development nation, it remains one of the poorest nations in the world and still struggles in South Asia region, despite the economic and social gains of the past few decades.

### **1.3.2 Sri Lanka development and influences**

Sri Lanka took its independence in 1948, after it was colonized for about 150 years by Britain, who developed coffee and tea plantations on the island. A democratic political system was put in place during the British colonization and continued after the British left Sri Lanka.

From 1983 to 2009, Sri Lanka suffered from a Civil War: the Sri Lankan Tamils wanted the independence from Sri Lanka to create the Tamil Eelam, because the Sri Lankan political system was mainly lead by the Sinhalese majority (82% of the population). The government won the war after the military Sri Lankan defeated the Tamil Tigers in May 2009, after a 26-year military campaign. This caused significant hardships for the population, environment and economy of the country.

Sri Lanka still faces many challenges, such as inequality between social groups, a fragile economy due to precarious debt situation, which leads to low public spending and poor-quality services in health and education. Also, the country is highly susceptible to natural hazards and extreme weather, which need lots of resources to absorb the losses they cause and weakens the economic situation of Sri Lanka.

Despite these challenges, Sri Lanka remains in the high human development category (73/188 countries), it is a lower middle-income country, which has been achieving economic growth averaging over 5% in the past decade. Also, the adoption of the Right to Information Act created opportunities for increased transparency, accountability and civic engagement, which can also be of interest for international investors.

Sri Lanka has lots of Indian and Chinese influence: historically and culturally, Sri Lanka and India have been very close, but India failed to intervene in the Sri Lankan Civil War, which hurt the relationship. Since then, China has built ports and highways in Sri Lanka in the light of naval agreements between the two nations, they also have strong

diplomatic and defense ties. In 2015, India has signed a nuclear energy deal to improve relations with Sri Lanka, in order to push back Chinese influence. Today, Sri Lanka's relationship with India is better, and the country has also lots of influence from China due to diplomatic relations and the growing cultural ties.

### **1.3.3 Vietnam development and influences**

Vietnam was a French colony from 1858 and declared its independence in 1945. The Democratic Republic of Vietnam was recognized by China and USSR in 1950. After the famous Dien Bien Phu battle in 1954, Vietnam was split into North and South at the Geneva conference, which led to the American War in Vietnam. North Vietnamese troops invaded South Vietnam and took control of it, which led to the reconstruction of the country, marked by the new constitution adopted in 1992.

The communist Party remains the leading force in Vietnamese society.

In 1994, the US lifted its 30-year trade embargo and the US-Vietnam diplomatic relations have been restored in full the following year.

In 1995, Vietnam has become a full member of the Association of Southeast Asian Nations (ASEAN), and a member of the World Trade Organization (WTO) in 2007.

Vietnam have remarkably developed these past 30 years due to economic and political reforms launched in 1986. The country's economic growth and development transformed Vietnam from one of the world's poorest nations to a lower middle-income country: its GDP per capita has been among the fastest in the world. Its fundamental growth drivers are resilient domestic demand and export-oriented manufacturing.

What is interesting about Vietnam's GDP growth is that it is equitably distributed, which significantly reduced poverty, and improved social outcomes: significant improvements in the provision of basic services – such as education and healthcare – and better access to basic infrastructure (e.g. electricity, sanitation facilities and clean water).

However, the country still faces challenges and limitations: poverty gains are fragile, productivity and labor force growth has been declining over the last 10 years. The country still has some vulnerabilities due to a weak domestic private sector, and improvements to the current urbanization model are needed to foster future growth, as well as significant investments and more productive infrastructure. Sustaining growth will be the real challenge for Vietnam.

## 1.4 Asian frontier markets: risks and challenges

Even though frontier markets present high growth potential, the development of these countries is slowed down by the many challenges that they face, which can be classified as follows:

- **Governance challenges** : such as corruption, accounting and disclosure, ownership and conflict of interest, and infrastructure
- **Environmental challenges** : such as climate and extreme weather, pollution and resource scarcity
- **Social factors** : such as the lack of consumer protection (i.e. inadequate quality control regulation, and product standards), employee protection (i.e. lack of health and safety standards, insufficient protection of employees against human rights abuses), and protection against the impact of companies' operations over the communities they operate in.
- **Institutional factors** : such as inadequate regulations, ineffective mechanisms to ensure contract enforcement and weak capital markets.

Frontier markets usually present higher risks and are facing more challenges than emerging countries. This section explains the specific risks and challenges that Asian frontier markets are facing today.

The risks that can be found in frontier markets can be categorized as follows:

### Macro-environmental risks:

- Political and economic instability risks
- Trading barriers
- Sovereign risks
- Sector risks
- Commodity risks
- Nationalization of resource risks

### Financial risks:

- Currency risks
- Liquidity risks
- Transaction costs
- Data shortage

Macro-environmental risks differ a lot from a country to another, this is why they are discussed for each Asian frontier country separately, further in this section. Financial risks are found in all Asian frontier market, so they will be described below for all 3 countries.

Currency risk : Because frontier markets have a less liquid and deep foreign exchange for their currency, there is a higher currency volatility, which represents a bigger risk. Also, bid-ask spreads are usually wider, and commissions are larger (see “transaction costs”, p. 11) This means that, in order to get in and out of the market, investors will pay a higher cost than in investments in emerging markets, for instance.

Changes in exchange rates can have a large impact on frontier equities’ performance, and investors need to pay attention to it.

The currencies to pay attention to are the following:

- Bangladeshi Taka (BDT) for investments in Bangladesh
- Sri Lankan Rupee (LKR) for investments in Sri Lanka
- Vietnamese Dong (VND) for investments in Vietnam

Liquidity risk : Investors in capital markets need to be able to seize opportunities to buy when they consider the price to be low and sell when they consider it to be high. However, frontier markets’ securities are less liquid because there aren’t so many investors interested in investing their money in these countries due to the risks it represents, and thus the trade volume is relatively low, which makes it harder to enter and exit the market to take advantage of the changes in prices.

This risk concerns more short to medium term investors than long-term ones, and it is what differentiates frontier markets assets the most from mainstream emerging market assets.

Asian frontier markets attract more trade than most frontier markets<sup>3</sup>, but the level of trade volume remains rather low.

Out of the 3, Vietnam is the one that attracts most trade (3.13% of the MSCI Frontier Markets Index’s total trade volume), followed by Bangladesh (1.62%) and Sri Lanka at the very end (0.80%). This draws the conclusion that the Vietnamese equity market is more liquid than other Asian frontier countries’ equity markets.

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<sup>3</sup> Appendix 3: Frontier markets total trade volume 2010-2017



Transaction costs : They include the local brokers' commission and bid-ask spreads for instance, which represent the labor required to make the transaction happen. According to a study realized in 2015 by Marshall, Nguyen and Visaltanachoti, transaction costs tend to be higher in frontier markets than in developed ones – mostly because trading barriers are higher and longer for foreign investors in these countries – which can make short-term investing very unproductive, and can make rebalancing the investment portfolio too often lose the diversification benefits.

These costs need to be taken into account, since they represent a reduction of the overall return on investment, and can diminish the opportunities that frontier markets investing presents.

Data shortage : There is a lack of data for frontier markets in comparison to other, more developed markets due to low trading activity in these countries, the lack of track record (due to short history, since frontier markets are relatively young), the absence of capital markets and the preference to use cash-based accounts.

The consequence is that risk is hard to evaluate precisely.

### **1.4.1 Bangladesh: specific risks and challenges**

#### Weak political environment

Bangladesh has a weak political environment, which is mainly due to the high terrorism risk the country is facing and the strong polarization between the 2 main political parties: Bangladesh Nationalist Party (BNP) and Bangladesh Awami League.

While both parties strive in favor of democracy, the other ideologies that they defend are very different. For instance, BNP's ideology is based on Bangladeshi nationalism<sup>4</sup>, free market economy and for the preservation of the teachings of religion (mainly Islam, but also Hinduism), whereas Awami League's ideology rests on Bengali nationalism<sup>5</sup>, secularism – i.e. the freedom of all religions and non-communal politics – and socialism, for the establishment of exploitation-free society and social justice.

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<sup>4</sup> based on secular, cultural, linguistic identity

<sup>5</sup> based on religio-linguistic and cultural identity

There is a high rivalry between the 2 leaders of each political party, which stems partly from differences over who played the greater role in the country's independence struggle.

This causes tensions in the country and on its political system, which represents a risk for foreign investors, because tensions and rivalry could escalate into an internal conflict, especially considering the fact that the country is vulnerable to terrorism risk.

#### Frequent natural disasters

This country is highly vulnerable to natural disasters, especially to cyclones – 137 events from 1907 to 2004, which affected 63,817,281 people among which 614,112 were killed – and severe floods – 64 events from 1907 to 2004, which affected a total of 369,678,156 people, among which 50,310 died.

In addition to the human cost of natural disasters, these can result in significant loss of harvests and infrastructure damages. This impacts economic performances, and thus presents a risk for foreign investors.

#### Weak business environment

Bangladesh's development is being compromised by infrastructure shortcomings and financial weaknesses: Bangladesh ranked 177 out of 190 countries in the World Bank's Ease of Doing Business Index, with very low position on getting electricity (185), and enforcing contracts (189) for instance.

Also, local and foreign investors are reluctant to invest in Bangladesh due to the large amount of unnecessary bureaucracy and red-tape.

#### Vulnerable export base

Bangladesh's export base depends heavily on the garment industry, which represented almost 25% of the country's exports in 2016. This represents a risk because if the textile industry in Bangladesh suddenly suffers from a large decline due to increasing global competition in this sector, the consequences on the country's economy could be highly impacted, which would affect equity investments, regardless of the industry (spill-over effect).

### 1.4.2 Sri Lanka: specific risks and challenges

#### Ethnic tensions

The inequality between Sinhalese and Tamils has become wider after the Sri Lankan military defeated the Tamil Tigers at the end of the Sri Lankan Civil War, which causes tensions to remain after the conflict.

These tensions remain a threat to the stability of the country, and thus its growth prospects, because Sri Lankan Tamils are still unhappy with the situation, and there is a risk that another war for independence could occur, or at least other conflicts within the country, which are harming not only the population, but also the country's environment and economy, which could translate into poor performance of the Sri Lankan stock market as well.

#### Vulnerable export base

Sri Lanka relies a lot on its textile and clothing industries for exports, which together represent 45% of the export base. This represents a large risk because the country's economic growth depends on this industry's performance. An adverse change in the supply and demand dynamics of Sri Lankan textiles and clothes could result in a large drop of the country's stock market performance, especially considering that there would be a spill-over effect over other industries as well.

#### Precarious debt situation

The debt to GDP ratio<sup>6</sup> of Sri Lanka is 77.6%. This is a very large government debt in comparison to GDP, especially given the level of development of this country: frontier markets usually have a lower level of government debt as they are in development phase, and usually rely more on their internal resources for growth.

As a result, the economy of this country is fragile, and the government tries to reverse this debt, which leads to low public spending and poor-quality of public services such as health and education.

This is a factor reducing growth and diminishing growth prospects for the future, since the labor force will be less skilled in the future due to low quality of education. This is a large challenge for Sri Lanka to overcome, and it could impact the Sri Lankan stock

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<sup>6</sup> The debt to GDP ratio is a measure that compares government debt and GDP, which indicates whether a country can produce and sell sufficient goods and services to pay back debts without incurring further debt. The lower it is, the less government debt the country has in comparison to its GDP.

market in a negative way in the next decades. For now, Sri Lanka relies on short-term external financing, while it tries to lower its debt.

#### Climate disasters

As Sri Lanka is a small island in the Indian Ocean in the path of two monsoons, this country is often affected by weather related hazards, such as floods, tsunamis, droughts and storms. The most common hazards are floods and droughts, because of the monsoonal rain or, in case of drought, failure of monsoonal rain.

Even though tsunamis are not frequent, the 2004 tsunami has highlighted the country's vulnerability to this type of disasters: two-third of the Sri Lankan coast was affected, and almost 3 million people suffered from this tsunami.

The agricultural production is often largely impacted by these natural disasters, especially floods and droughts, and the direct consequence of this is the need to use lots of resources to absorb the losses as well as the human cost to these disasters, which weakens the country, and its economy.

Climate disasters represent a large risk in Sri Lanka, which can have an adverse effect on the stock market: being able to heal from an injury or eat is more important than market performance. Even though this is an indirect consequence, it can have a large impact on an investment's performance, this is therefore a risk that must be considered by investors.

### **1.4.3 Vietnam: specific risks and challenges**

#### Lack of transparency

Transparency and corruption is a big issue in most frontier markets. Transparency International has ranked Vietnam 107 out of 180 in their Corruption Perception Index (2017), compared to 91/180 for Sri Lanka and 143/180 for Bangladesh.

Even though this is a risk that is not specific in Vietnam, it is one of the largest challenges that the country has difficulty to overcome in order to foster growth. Vietnam is at a more advanced stage of development than most frontier markets, and there was many discussions about whether Vietnam should be reclassified as an emerging market since June 2017. The lack of openness to foreign investors is the main reason for that, but the lack of transparency and of availability of information disclosures in English by local companies have also counted in the decision not to promote Vietnam to an emerging market status.

Corruption and the lack of transparency is a large issue for foreign investors, because it makes the available information questionable at best, and the lack of information makes the market less predictable.

#### Complicated business environment

The business environment needs improvement in Vietnam, because of infrastructure shortcomings, heavy state involvement and inefficient business registration, tax payment and customs procedures.

These factors are large barriers to the development of businesses, which has an adverse effect on the country's growth and on its equity market, thus decreasing returns on investments in Vietnam.

#### Recurrent tensions with China

The sovereignty dispute between China and Vietnam over the China Sea is affecting diplomatic relations between the two countries. Vietnam has started to drill oil in this region in July 2017, and China ended the explorations by threatening to attack the facilities if they were not dismantled. This has revived tensions between the two countries.

War seems unlikely, but China has a large influence on the region, this is why Vietnam needs to keep good relations with its giant neighbor. The escalation of these tensions into an international conflict would be highly detrimental to Vietnam and its economy, which would negatively impact its stock market.

## 1.5 Asian frontier markets: opportunities

As shown in the previous sections, frontier markets present many risks. However, they still attract the attention of investors, because they present so many opportunities. This section goes through the different opportunities in frontier markets, focusing on Asian frontier countries.

### Rapid economic growth prospects

Frontier markets are expected to be the next emerging economies, and therefore, a rapid economic growth is expected from them in the coming years, if they manage to overcome some challenges that they still are facing.

Technological advancements, a strong fiscal position, low labor costs, favorable demographics as well as a large stock of natural resources are typical factors supporting growth in these countries.

For instance, Bangladesh has reduced poverty and hunger in the country of 50% from 2005 to 2016, becoming a role model for eliminating hunger. Now it has shifted its focus towards Sustainable Development Goals (SDG) and intends to achieve them through effective diffusion of Information and Communication Technologies (ICT). Doing that, Bangladesh is facilitating an environment that encourages people to contribute to progress, and thus fostering economic growth of the country through technological advances.

Also, the rising costs of wages in China have made Bangladeshi and Vietnamese labor costs seem particularly low in comparison, and lots of companies have shifted their production from China to Bangladesh and Vietnam to take advantage of the low labor cost. Bangladesh and Vietnam are attracting more and more foreign direct investment, and this contributes to fostering economic growth in Asian frontier countries.

Demographics are also very favorable to economic growth in Asian frontier countries, because they have a young growing population that will contribute to a developing workforce and increased domestic consumption.

This is particularly true for Bangladesh, whose median age is much lower than the world's median age, with 26 years for Bangladesh's population versus 30.4 for the world population in 2017.

A large stock of natural resources is also one of the features that can generally be found in frontier markets and that can foster economic growth as well, and Asian frontier countries do have lots of natural resources to rely on. For instance, Sri Lanka has heavy reserves of limestone, graphite, mineral sands, gems, phosphates and clay, which they can use to develop their industries and/or trade to foster further economic growth.

Another factor that supports economic growth in frontier markets is their exceptionally low debt burdens in comparison to more developed economies. In Asian frontier markets, Bangladesh has the lowest debt to GDP ratio: in 2017, it was only 27.1%. However, Vietnam and Sri Lanka had a debt to GDP ratio in 2017 of 61.5% and 77.6% respectively, which is rather high for frontier markets (see section 1.4.2 for Sri Lanka's government debt).

Bangladesh is the only Asian frontier country that really does have a strong fiscal position in comparison with more developed markets. Its debt to GDP ratio is lower than that for China (47.6% in 2017) or India (68.7% in 2017).

#### Convergence and diversification benefits

Another opportunity in frontier markets is the diversification potential that they present, since they are so different from one another and much less influenced by global economic and political developments than local ones. This results in low correlations to other markets.

Frontier markets are particularly good portfolio diversifiers when combined with other asset classes, to reduce the overall risk of the portfolio.

For Asian frontier markets, it is already rather clear that Vietnam, Bangladesh and Sri Lanka are very different from one another. However, the regional factor makes them more comparable, especially since they are influenced by the same countries in the region, mainly China and India.

Correlation and diversification potential is discussed in section 2.4, to see how correlated Asian frontier markets are with other markets and with each other.

## Chapter 2

### 2. Analysis

#### 2.1 Risk-return analysis

This research aims to compare returns and risks on equity investments in Asian frontier markets. Therefore, this section deals with the computation of performance and risk measures based on the daily stock prices of different MSCI indices, since the MSCI Index is used as the basis of this paper. This analysis is performed on the data collected from the following indices:

—	MSCI Bangladesh Index	—	MSCI Frontier Markets Index
—	MSCI Sri Lanka Index	—	MSCI Emerging Markets Index
—	MSCI Vietnam Index	—	MSCI World Index

The data set contains 2088 daily observations covering a period from 01.01.2010 to 31.12.2017, which represents 8 full years.

As Bangladesh was the last of the 3 current Asian frontier markets to be classified in the MSCI Frontier Markets Index, data on daily stock prices is available for this country only starting in November 2009, which is why the data selected for this analysis starts on January 4<sup>th</sup> 2010, which is the first published date of 2010.

#### 2.2 Methodology

This quantitative analysis compares risks and returns in Asian frontier markets equity investments, and thus uses different risk and performance ratios to measure them based on calculations on MSCI indices data.

These ratios are used to establish the level of risk and performance of each index. Then, the results for each of Asian frontier countries' index are used in the analysis to determine whether each country is worthy of investors' money, whether they impact positively or negatively the MSCI Frontier Markets Index (which includes Asian frontier markets), and whether they are better investments than emerging and developed markets.

To determine that, this research compares the results of each ratio computed from each index, based on the following: volatility of the market, max drawdown over the last 8 years, daily returns as a measure of performance and the Sharpe ratio. Other measures of risks and performance exist – such as the beta ( $\beta$ ), the value at risk (VaR) and the



alpha ( $\alpha$ ) for instance – but this study does not use them due to the lack of data necessary to compute them and the low added-value that they present in the context of this analysis.

### 2.2.1 Risk measures

#### Volatility

This metric measures the dispersion of returns, which gives investors an idea of the average risk of an investment. Volatility is computed by taking the standard deviation of returns over a certain period. The lower the volatility, the less risky the investment.

Here's how standard deviation is computed:

$$\sigma = \sqrt{\frac{\sum_{i=1}^N (r_i - r)^2}{N - 1}}$$

For      $r$         = Mean of returns  
          $r_i$         = Return at period i  
          $N$         = Number of observations

Also, it is important to mention that volatility treats positive and negative risk just the same: a high volatility doesn't only mean that the index can decrease by so much, it can also go up.

The data collected from MSCI are daily returns. For the analysis to make more sense and to be more straight-forward, measures are computed on an annual basis, which means that volatility must be annualized using the following formula:

$$\text{Annualized volatility} = \sqrt{(T)} \cdot \sigma_t$$

For      $T$         = Number of observations in a full period  
          $\sigma_t$         = Standard deviation over a time period

This study uses daily returns, so  $T=360$ , because in banking, it is common practice to use 360 days per year in calculations.

### Max drawdown

The max drawdown is a measure of extreme risk, it gives an indication of the maximal historical loss occurred over a given period and is used to compute the “time to recovery” of a stock, which computes how long a stock takes to recover from a drawdown.

This is an important measure, because volatility only deals with the average risk, but in order that investors know what they risk, they also need to consider extreme risks: what is the biggest loss they could have to face if they choose to invest? The max drawdown gives an order of magnitude of the potential maximal loss, based on historical data. It is particularly interesting to look at it when considering frontier market investments, because it can be hard to exit the market when times are bad, due to the illiquid nature of these markets (see “Liquidity risk”, p. 10)

The max drawdown is the minimal historical value of the index as a percentage of the maximal value of the index before the fall.

The data selected for this analysis captures 8 years of historical data (01.01.2010 31.12.2017), thus excluding the financial crisis of 2008.

## **2.2.2 Performance measures**

### Return

The return of an investment is the money made or lost on an investment. It can be positive – in which case it is called a gain – or negative – that is called a loss – and it is either expressed as a percentage of the capital invested, or in monetary units.

This research studies the returns on indices in specific stock markets and not a particular investment or investment portfolio, so it makes more sense to look at return as a percentage of the value of each index.

This study uses daily index prices. Therefore, to calculate the daily return on an index, it uses the following formula:

$$\text{Daily return} = \frac{D - D_{-1}}{D_{-1}}$$

For  $D$  = Price index level at day D

$D_{-1}$  = Price index level at day D-1

As this study also computes annualized volatility based on daily returns, it also needs to annualize returns to make these variables comparable.

$$\text{Annualized return} = \left( \frac{P_1 - P_0}{P_0} + 1 \right)^{\frac{360}{N}} - 1$$

For  $P_1$  = Price level of the index at the end of the period  
 $P_0$  = Price level of the index at the beginning of the period  
 $N$  = Number of days within the period

### Sharpe ratio

The Sharpe ratio is a measure of the efficiency of an investment. It is also called the risk-adjusted performance and computes the excess return generated per unit of risk (volatility). What is called the excess return is the risk-free rate subtracted to the return generated by an investment. It allows to separate the pure performance that is due to taking the risk, excluding the compensation for the time-value of money.

Thus, the Sharpe ratio is computed as follows:

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

For  $R_p$  = Performance of the investment  
 $R_f$  = Risk-free rate  
 $\sigma_p$  = Standard deviation (volatility)

This study computes ratios on an annual basis, therefore, it will use annualized returns for the performance of the investment and annualized volatility for the standard deviation.

The risk free rate is the return obtained from a risk free investment. As no investment is absolutely risk free, it is common practice to use a rate that is as risk free as possible such as a measure of interbank lending rate – such as the LIBOR – or a measure of government interest rates – such as a 6-months treasury bill rate.

MSCI uses the LIBOR rate to compute the Sharpe ratios of its different indices, therefore this study uses the LIBOR rate as the risk free rate as well. The data collected covers a

period from January 1<sup>st</sup> 2010 to December 31<sup>st</sup> 2017, and the LIBOR rate has evolved during this period, so it is necessary to compute the average LIBOR rate.

The Sharpe ratio is computed on different time periods, so this study computes the average LIBOR rate over different periods based on data collected from Bloomberg (LIBOR USD 3 months)<sup>7</sup>, which are reported on the table below (Table 1):

**Table 1 – LIBOR average rates over different periods**

1-year average LIBOR	(01.01.2017-31.12.2017)	:	0.492219641%
3-years average LIBOR	(01.01.2015-31.12.2017)	:	0.565380104%
5-years average LIBOR	(01.01.2013-31.12.2017)	:	0.775084097%
8-years average LIBOR	(01.01.2010-31.12.2017)	:	1.264405616%

Source: author's calculation on data provided by Bloomberg

As this ratio computes the excess return per unit of risk, the higher it is, the better. However, it is rather unlikely that this ratio returns a value higher than 1.5, because risks and returns go together, and generating more than 1.5 unit of excess return per unit of risk sounds too good to be true, especially when looking into equity investments and country indices.

## 2.3 Results

The objective of this research is to determine whether it is worth investing in Asian frontier markets and to determine which ones present the best opportunities when compared with the risks. This part of the paper presents the results of the quantitative analysis performed on the MSCI data for each index presented in section 2.1.

Firstly, the level of average and extreme risk is assessed by comparing all indices, which allows to establish the risk level of Asian frontier markets.

Secondly, the level of performance is established by performing an analysis on the evolution of returns of each index, and comparing the results between all indices.

Finally, performance needs to be compared with the risks to see whether the added risks are worth the returns, and this is done by adjusting the performance to the risk, using the Sharpe ratio.

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<sup>7</sup> Appendix 4: Historical LIBOR rate 2010-2017

### 2.3.1 Establishment of the risk level

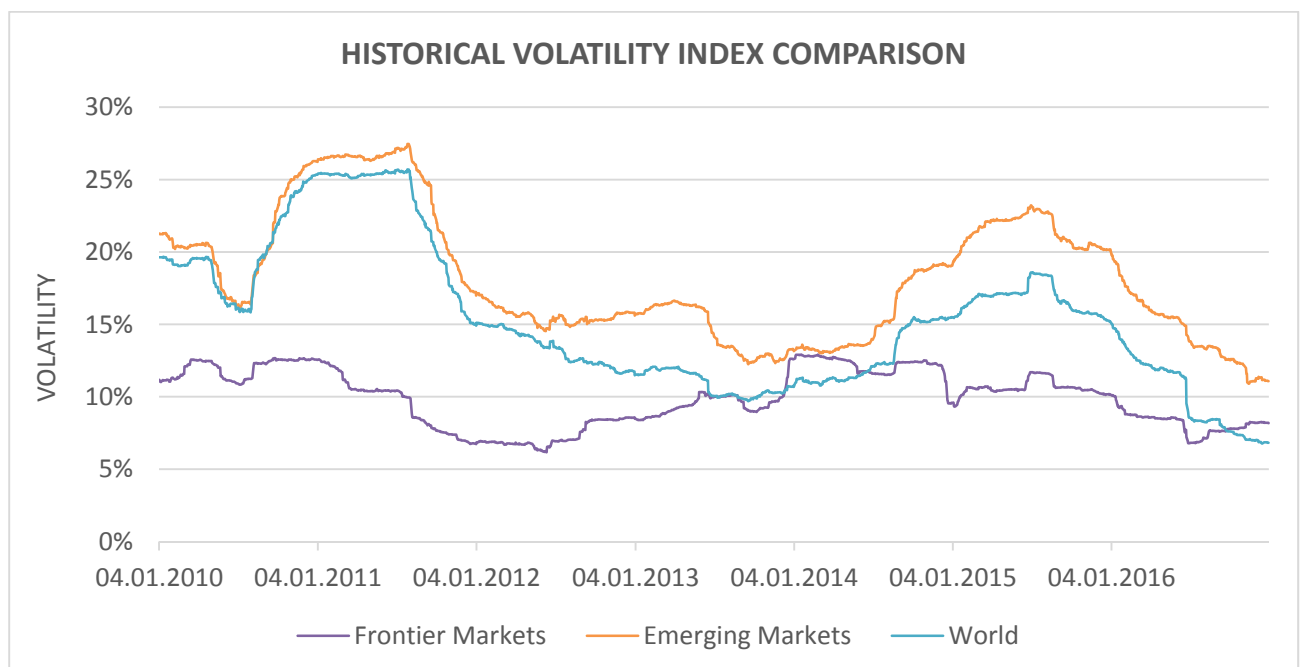
In order to establish the level of risk in each country, it is important to consider average risk and extreme risk. In this research, the average risk is measured through the volatility (standard deviation,  $\sigma$ ) of the returns of an investment, and the max drawdown is used to assess the extreme risk.

#### **Average Risk:**

In this section, it is important to stress that even though the word “risk” has a bad connotation, it refers also to positive risk – the risk that something positive happens – and the standard deviation is blind to the direction that the index takes, whether its value is increasing or decreasing.

Frontier markets are known among investors to be highly unpredictable, which means that they are perceived as very risky, and this is why most investors hesitate to invest in these markets. However, the following graph (Figure 3) shows a quite steady volatility for frontier markets, whereas emerging and developed markets' volatility varies more overtime.

**Figure 3 - Historical volatility comparison 2010-2016**

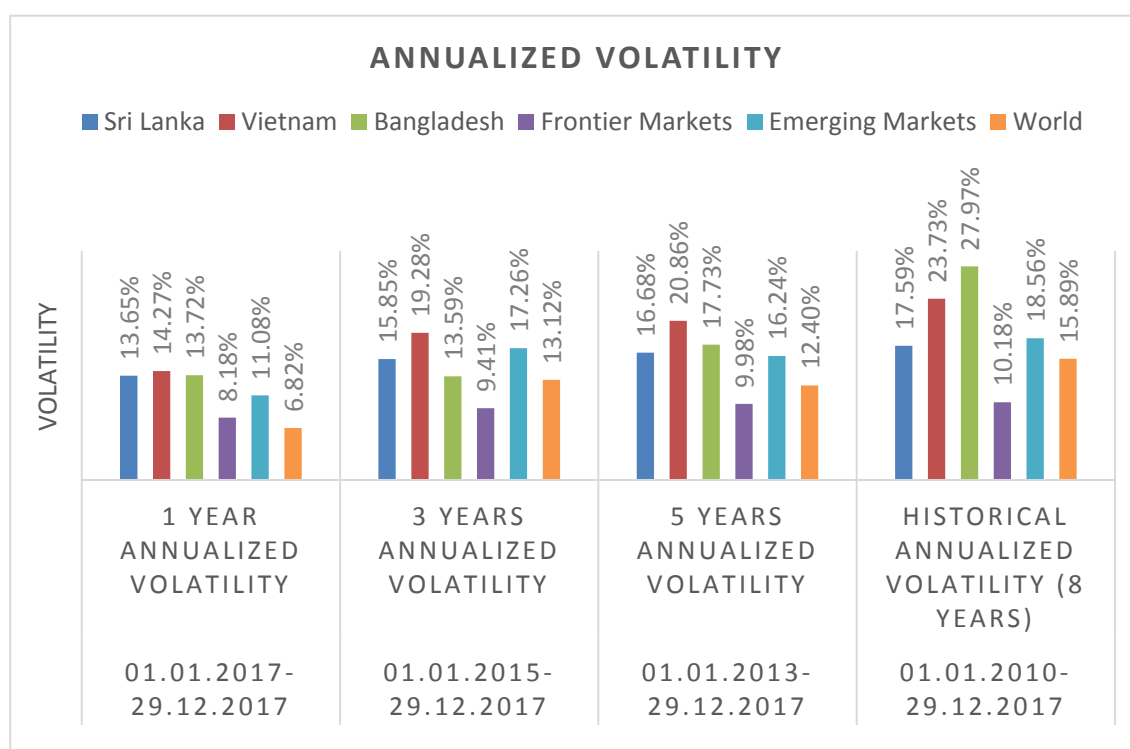


Source: author's calculation on data provided by MSCI (daily prices on each index)

This can be explained by the fact that there is less investing activity in frontier markets, so the market is calmer and fluctuations are less important in these markets than in more developed and more investable ones.

This graph (Figure 3) shows a decline in volatility for all indices and a striking correlation between the volatility of returns in emerging and developed markets, frontier markets do not follow the same track. Also, the differential between the largest and lowest values of volatility is larger in emerging and developed markets' indices than in the frontier markets index. But before drawing such a conclusion, it is important to take a look at annualized volatility of daily returns. This study computes the annualized volatility over the last year, the 3 last years, and the 5 last years and over the whole analyzed period (8 years).

**Figure 4 - Annualized volatility comparison**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This graph shows the annualized volatility of the returns over different periods. There are few striking things to point out on this graph:

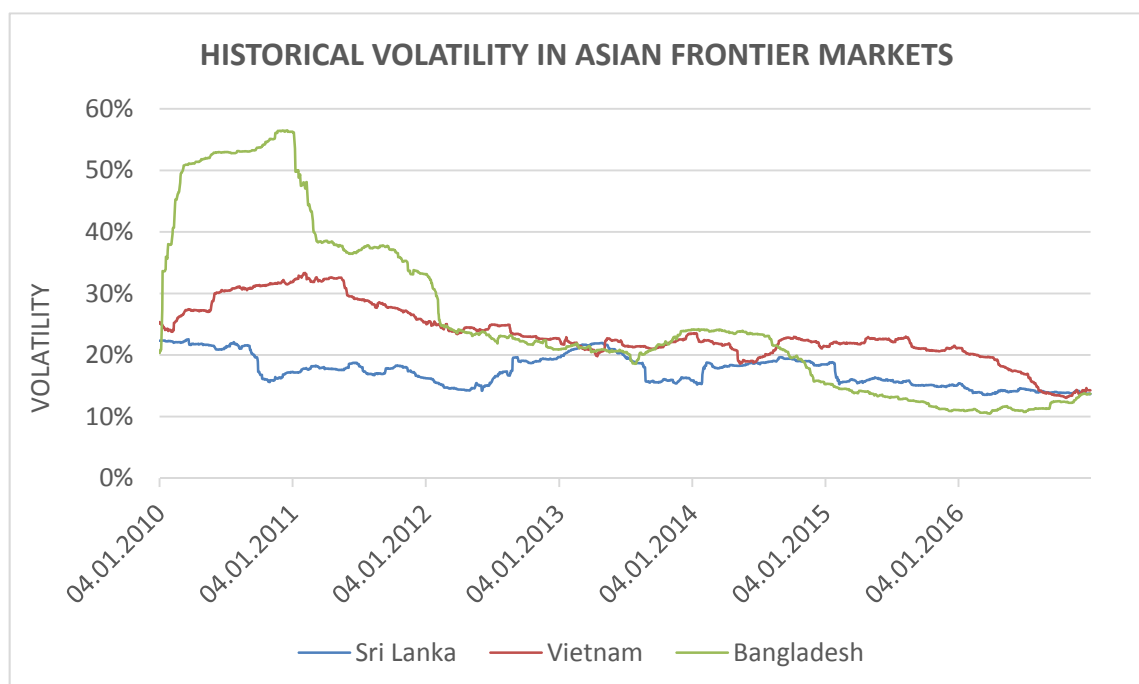
- Emerging markets are more volatile than frontier markets regardless of the analyzed period.
- Asian frontier markets' volatilities have decreased over time.
- Asian frontier markets are much more volatile than all other indices regardless of the analyzed period.
- Overall, volatilities are declining, and differences between indices are diminishing.

The question that is raised by this analysis is the following: how come Asian frontier markets have such a high level of volatility when the general MSCI Frontier Market Index has such a low level of volatility in comparison, even though they are all included in this index as well? The answer is that because frontier markets are different from one another, and are at different stages of development, they do not collaborate so much with neighboring countries (often also frontier markets) in order to develop internally, so they aren't all impacted as a block when there is a crisis somewhere.

As a result, they are not correlated to one another (see section 2.4 for more information on correlation), which means that when putting all frontier markets together to create the MSCI Frontier Markets Index, the variations of results going in different directions cancel each other out, which results in the volatility being lower. In other words, the cumulated returns of all frontier markets is less volatile than the returns on individual frontier countries' indices. This can also explain why Figure 3 shows that the frontier markets are less volatile than emerging markets.

This study focuses on Asian frontier markets, and is meant to compare the level of risk and performance in each country, and compare the results among them. Therefore, it is important to zoom in Asian frontier markets and see how volatility has evolved over the last 8 years at a country level.

**Figure 5 - Historical volatility of Asian frontier markets' returns 2010-2016**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This graph (Figure 5) compares the volatility of returns on equity investments in each individual Asian frontier market over the last 8 years. The striking element is that the trend has been decreasing for all indices, and there seems to be low correlation between these countries (section 2.4 discusses this in more details), as expected when comparing frontier markets. Based on this graph, it is not obvious which country has a higher level of risk based on volatility, so it is essential to study the annualized volatility.

Figure 4 reported the volatility of Asian frontier markets' returns over different periods, and showed that Sri Lanka and Vietnam have had a higher level of annualized volatility than Bangladesh at least from 2012, but over the whole period analyzed (8 years) Bangladesh still shows the highest annualized volatility. In the previous graph (Figure 5), it is clear why: the volatility of returns in Bangladesh rose sharply in 2010 and stayed very high until mid-2012, which means that this very high volatility – the highest in the whole graph – is only accounted for in the 8-year annualized volatility, which explains the large difference between the 8-year and the 5-year annualized volatility.

The conclusion drawn from this part of the analysis is that Asian frontier markets are putting upward pressure on the volatility of the MSCI Frontier Markets Index (i.e. they are more volatile than the average volatility of all frontier markets combined), so Asian frontier markets are more volatile – and thus more risky when considering the average risk – than the average of all frontier markets (including Asian ones).

### **Extreme Risk:**

The max drawdown is the measure that this study uses to assess the extreme risk of investing in Asian frontier markets, and represents the largest historical decline. It is presented in the form of historical drawdown graphs because it is important to not only focus on one large drop, but also see how frequent large declines are and how fast it dropped, as well as how fast indices recover from large declines.

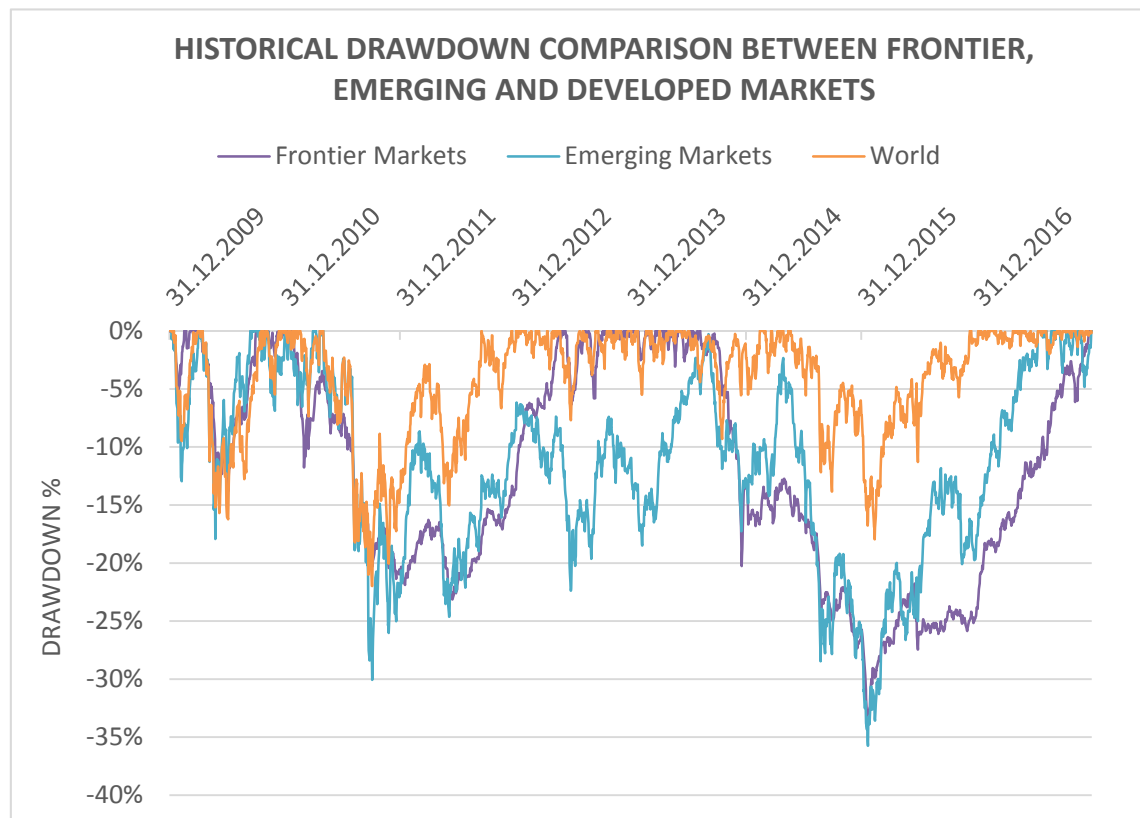
First, this study compares the drawdowns and time to recovery between frontier, emerging and developed markets to situate where frontier markets stand in a worldwide context.

Second, Asian frontier markets historical drawdowns are compared to the average of all frontier markets using the historical drawdown of the MSCI Frontier Markets Index, to see whether they present more or less extreme risks than what is usually expected from frontier markets.



Third, Asian frontier markets are compared to one another, to see which ones present the highest and lowest extreme risks, in order to see which country is the less risky when concluding on the overall level of risk (considering average and extreme risks).

**Figure 6 - Historical drawdown comparative graph between frontier, emerging and developed markets 2010-2017**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This graph (Figure 6) shows some correlation between indices: each index experiences a large drawdown at the same time as others, with more or less sensitivity and recovers more or less quickly from it.

For instance, emerging markets' drawdowns are moving almost all the time in the same direction as that for developed markets, but with a clear added sensitivity: this is particularly visible from mid-2015 to early 2017. Also it is noticeable from this graph that emerging markets need more time than developed ones to recover from large declines. The drawdowns in both emerging and developed markets mid-2012 and early 2016 are showing this quite clearly.

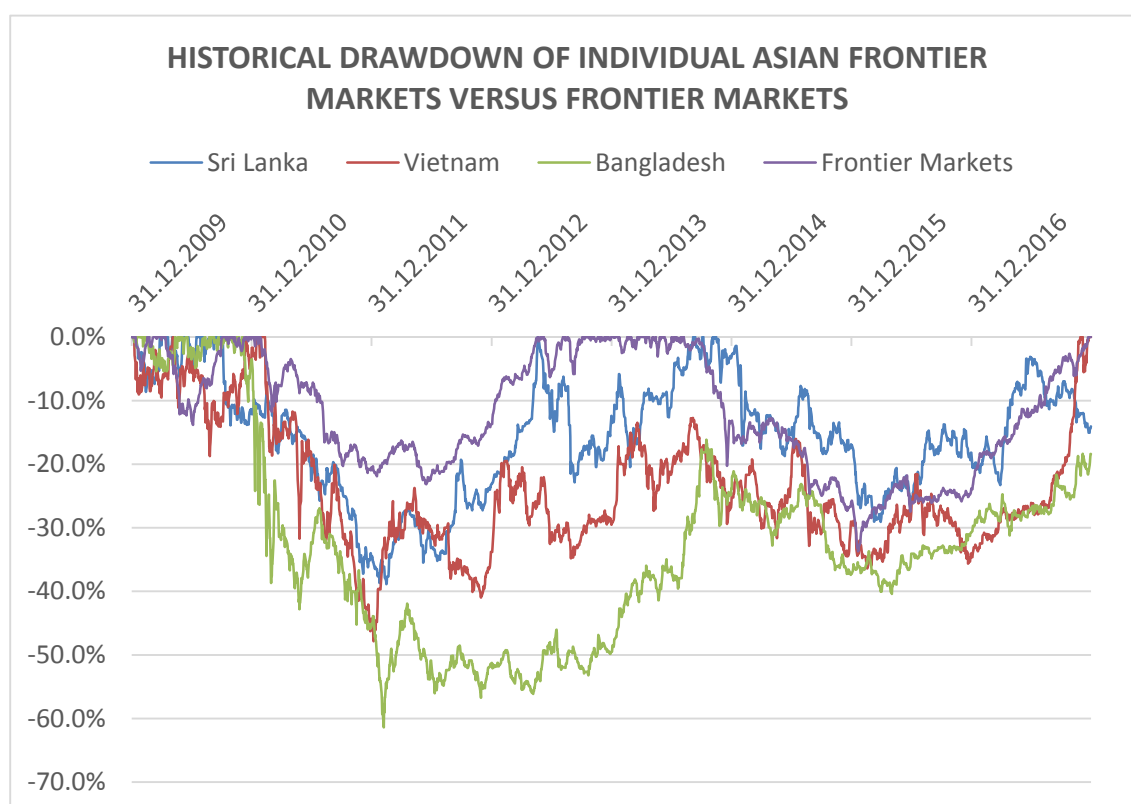
As far as frontier markets are concerned, there is visibly less correlation with the two other indices, but they do also suffer from particularly large losses at the same time.

Investors tend not to initiate new investments in frontier countries during a financial crisis. The time to recovery seems to be longer as well, and it is particularly noticeable after the drawdown of early 2016.

The max drawdown for frontier markets occurred at the same time as that for emerging markets: the MSCI Frontier Markets Index experienced a drawdown of -33.7% in January 2016, and -35.7% for the MSCI Emerging Markets Index.

Developed markets also faced a large drawdown during that period, but not as substantial as the one from October 2011, when the MSCI World Index experienced a max drawdown of -22.0%. The MSCI Emerging Markets Index has faced the largest drawdown during the past 8 years among the 3 indices, followed by frontier markets and then developed ones.

**Figure 7 - Historical drawdown comparison between individual Asian frontier countries and the MSCI Frontier Market Index 2010-2017**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This graph (Figure 7) shows the drawdown in Asian frontier market individual indices as well as with frontier markets, to see whether the extreme risk is higher in Asian frontier markets than in frontier markets in general.

The correlation between the 4 indices compared is less obvious than between frontier, emerging and developed markets, but it is there: there are two noticeable phases where the curves are concaved down, one starting around mid-2011 and finishing around 2013-2014, the other one – which is a bit clearer – starting around the end of 2014 until the end of the graph.

The low correlation is precisely one of the attributes of frontier markets, which is why it makes sense that this graph doesn't show clear correlation between these 4 indices.

**Bangladesh :** This index has experienced the largest maximum drawdown of all in January 2012, with a value dropping from 61.4%. Its drawdowns are largely below the ones from the Vietnam and Sri Lanka indices in the beginning of the analyzed period (2010 - mid 2014) and then, it isn't clear anymore which one of Bangladesh or Vietnam is the most sensitive index until the end of the analyzed period (mid 2014 - 2017). This index takes the longest time to recover, and that, throughout the whole period.

The MSCI Bangladesh Index has never managed to recover from the large and sharp decline in the beginning of 2011 throughout the period analyzed, which degenerated into a max drawdown in January 2012.

**Vietnam :** This index experienced its max drawdown of -47.8% in January 2012, which is a very large drop, but not as significant as Bangladesh's.

The MSCI Vietnam Index has taken a lot of time before finally recovering from its max drawdown, but it finally managed to recover at the very end of the analyzed period, in November 2017, which means that it took a little bit less than 6 years to recover from this decline.

**Sri Lanka** : This index experiences drawdowns that are less significant than the two other Asian frontier market indices. The max drawdown for Sri Lanka is -38.9% in January 2012, which is relatively close to the max drawdown of the MSCI Frontier Markets Index (-33.7%).

In addition to apparently being relatively less vulnerable to crises, the MSCI Sri Lanka Index recovers faster than Bangladesh and Vietnam from large declines. It recovered from its max drawdown in May 2013 already, less than a year and a half after the maximum decline the index has experienced during this period.

Overall, Figure 7 shows that Asian frontier markets present more extreme risks than the average of all frontier markets combined (MSCI Frontier Markets Index). The most risky is Bangladesh and the less risky is Sri Lanka.

When it comes to recovering from a large decline, Asian frontier markets seem to take more time than the average of frontier markets, since the MSCI Frontier Market Index shows a recovery from its max drawdown in January 2016 already a little less than 2 years after, and from another large drawdown in June 2012 (-23.1%) in only 11 months. This means that Asian frontier countries are factors increasing the level of risk in the MSCI Frontier Markets Index, and they are overall more risky than other frontier markets when it comes to extreme risks.

Not only do Asian frontier markets present more extreme risks than other frontier markets and also more than emerging and developed markets, this study has also revealed a higher level of volatility (average risk) in Asian frontier markets than in any other indices analyzed in this paper. It is thus natural to conclude that Asian frontier markets are more risky than others based on this analysis.

The question that remains now, is whether the added risk is compensated by an additional return to make it worth investing. In order to answer this question, it is important to consider the performance level of each index, so that we can compare risk and performance later on.

This is what the next section of this analysis covers.

### 2.3.2 Establishment of the performance level

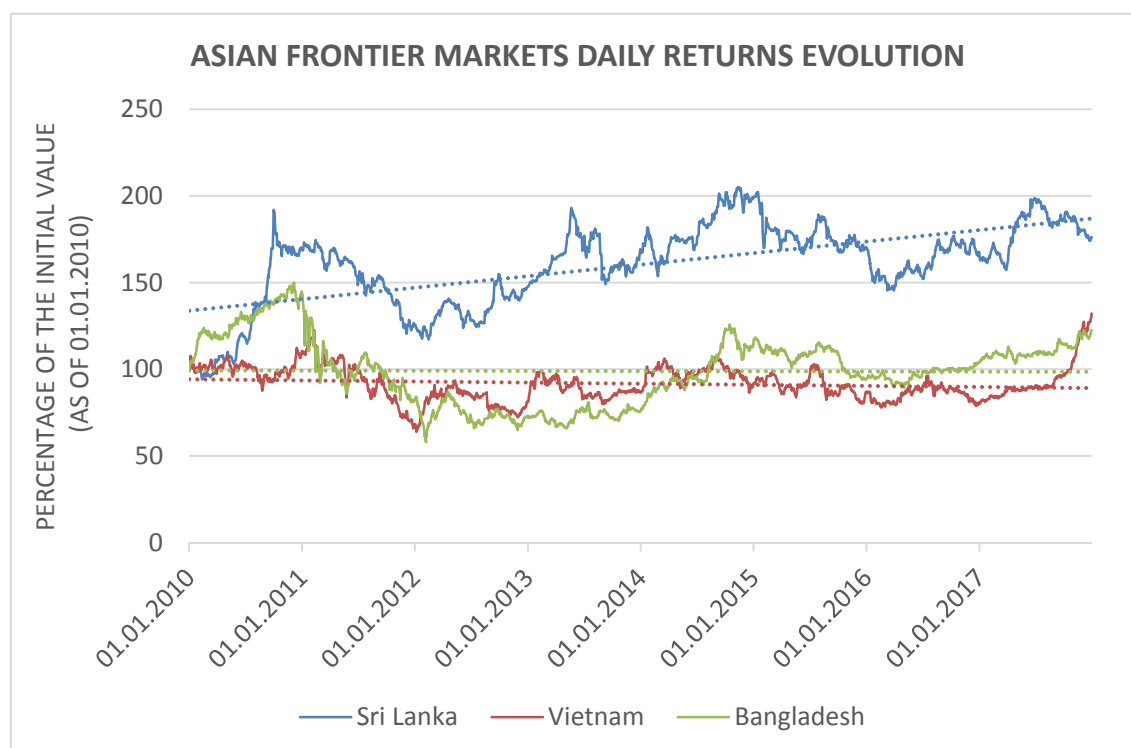
In this section, the analysis starts on the evolution of the indices themselves, by commenting and comparing the movements of the Asian frontier markets' indices, which helps to shape the context of the next part of this analysis.

Then, the daily returns of all the analyzed indices are annualized and compared over different periods, to establish the level of performance, before comparing the results of this section with those of the previous one (level of risk).

#### Evolution of the Asian frontier markets indices

This study is done on the performance of MSCI indices of the last 8 years (2010-2017). In order to compare the performance of each Asian frontier markets' index as of 31.12.2017, it is important to see how it evolved during this period, and thus, to establish the growth as a percentage of the initial value of each index. The initial value is set at 100 for all indices, to allow better comparison.

**Figure 8 - Evolution of daily returns over 8 years in MSCI Asian frontier markets' indices in percentage of their initial value as of 01.01.2010**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This graph (Figure 8) shows that investments in Sri Lanka have performed better over the last 8 years than those in Bangladesh and Vietnam, which stagnated a little. However, during the second semester of 2017, the Vietnam index shows a sharp increase, thus surpassing the growth of the Bangladesh index.

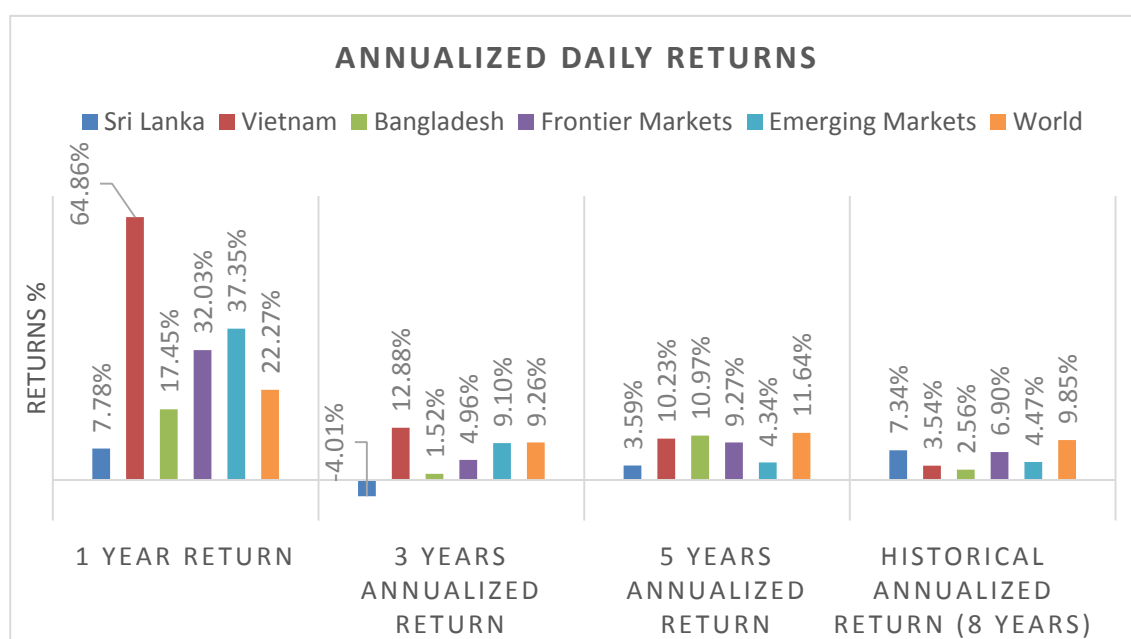
### Annualized daily returns

In order to critically analyze the performance level of investments in Asian frontier market, an analysis on the daily returns must be performed, not only on these 3 countries, but also on the average daily returns of all frontier markets combined – using the MSCI Frontier Markets Index – as well as on emerging and developed markets' performance by using the MSCI Emerging Markets Index and the MSCI World Index.

This data is then used to compare the results from one index to the others, to have a critical view on the level of performance of Asian frontier market equity investments.

To perform this analysis, daily returns have been annualized over different time periods, in order to push this analysis further. The graph below shows the annualized daily returns of equity investments in each relevant index, as described above.

**Figure 9 - Annualized daily returns comparison of individual Asian frontier markets and other relevant indices**



Source: author's calculation on data provided by MSCI (daily prices on each index)

The most striking element that comes out when analyzing the results reported on Figure 9 is that returns have wildly increased last year (2017) in all of the indices, especially in Vietnam, which had annualized daily returns of almost 65%. This can be seen on Figure 8 as well.

**Sri Lanka** : On Figure 8, it shows that Sri Lanka had the best evolution in the past 8 years among Asian frontier markets. However, on Figure 9, it is clear that investments in Sri Lanka haven't had the best returns over the last 5 years, and that its current high level over Vietnam and Bangladesh shown on Figure 8 is mainly due to a sharp increase in the returns during 2010, which brings the historical annualized return (8 years) of Sri Lanka at a rate of 7.34%.

In other words, high daily returns on equity investments in Sri Lanka had their time in 2010, but since then, returns have been rather disappointing, even though the trend is bullish (as shown on Figure 8).

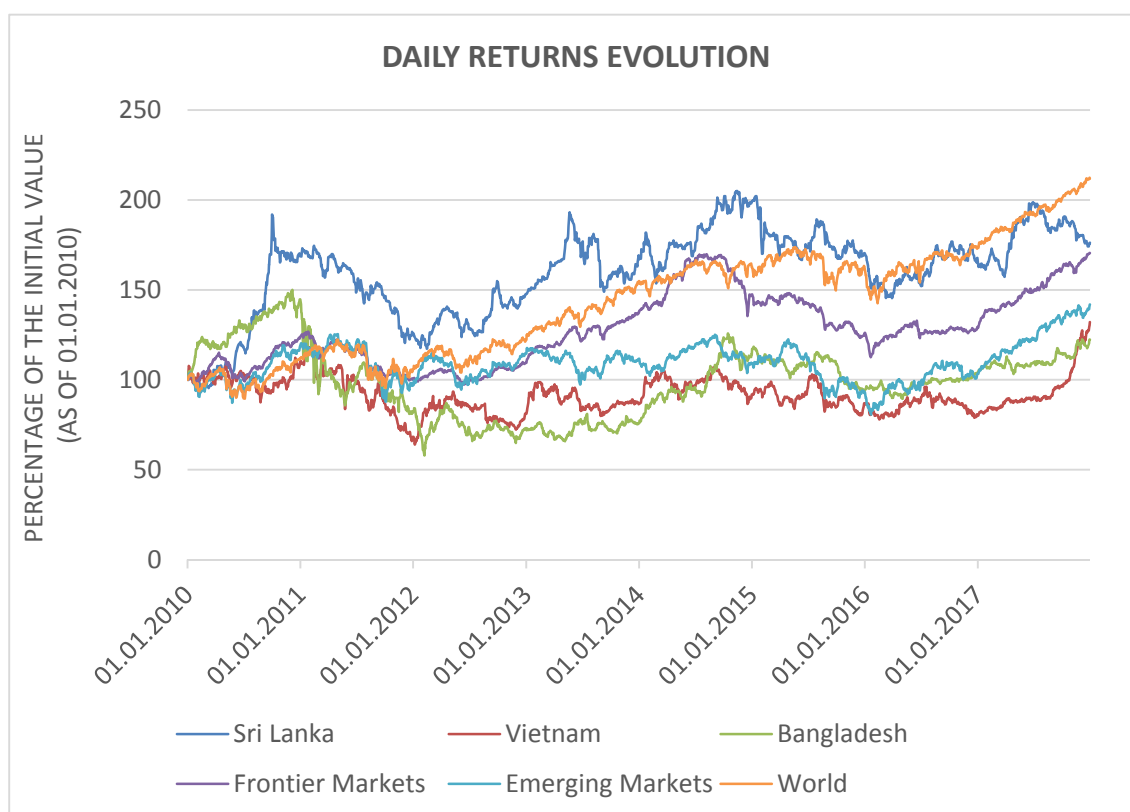
**Vietnam** : When it comes to Vietnam, on Figure 8, the trend line is rather constant, so it is interesting to see that annualized daily returns have been largely positive for the last 5 years when computing the annualized returns. However, when comparing Figure 8 with the results reported on Figure 9 for Vietnam, it is clear that the annualized returns over 5 years and 3 years is positive because of the sharp increase in returns in the second semester of 2017.

Vietnam hasn't been returning much from 2010 to mid-2017, but returns are increasing in the last part of the graph, and this trend could be expected continue its way up.

**Bangladesh** : The MSCI Bangladesh Index also has a constant trend line over the last 8 years. It has a historical annualized return (8 years) of 2.56%, which indicates that from its value as of 01.01.2010, the index has barely gained anything. It has experienced a sharp decline from end of 2010 to early 2012, but since then, returns have been rather constant, with a slight improvement in the last year (2017), bringing annualized returns of 17.45%.

Now that the performance of Asian frontier markets' indices has been understood, it is crucial to compare with the MSCI Frontier Markets Index, as well as the emerging and developed markets indices, in order to evaluate the level of performance in comparison with investments in other regions. To do so, it is interesting to see the evolution of the other indices in comparison to Asian frontier markets' indices.

**Figure 10 - Evolution of daily returns over 8 years in all indices  
in percentage of their initial value as of 01.01.2010**



Source: author's calculation on data provided by MSCI (daily prices on each index)

The frontier, emerging and developed markets indices have sharply risen during the last year. A large correlation is visible in this graph between the 3 big indices: overall, worldwide markets have been bullish in 2017. Asian frontier markets do not show as much correlation, but the indices also show a bullish trend in 2017. Correlation is discussed further in section 2.4.

Bangladesh and Vietnam have been the least performing indices over the whole analyzed period. Sri Lanka however is one of the top performing index over 8 years. However, in Figure 9 it was shown that Sri Lankan returns have been low these past few



years, and the index is declining by the end of 2017, whereas Bangladesh and Vietnam are still increasing in the second semester of 2017.

In Figure 9, it is shown that returns are not consistently higher in Asian frontier markets than in other indices: in 2017, even though Vietnam held the record return, Sri Lanka and Bangladesh performed worse than the average of all frontier markets, as the performance of the Bangladesh and Sri Lanka indices are lower than that for the MSCI Frontier Markets Index.

Historically, over the whole analyzed period, developed markets are the ones that performed the best, and Bangladesh is the index that performed the worst from 2010 to 2017.

This analysis reveals that returns are not higher in frontier markets than in emerging and developed ones, and that Asian frontier markets' indices do not consistently perform better than other frontier markets indices.

The next step is the comparison of the performance level establish in this section, and the risk level established in the previous one.

### **2.3.3 Risk adjusted performance**

The objective for investors is to minimize risk while maximizing returns, but they are well aware that those variables go together. Therefore, it is paramount to adjust the performance to the risk of the investment before making an investment decision.

The risk adjusted performance is determined using the Sharpe ratio, and this study compares the Sharpe ratios on annualized returns and volatilities of each index, in order to determine whether investors should consider investing in Asian frontier markets rather than other markets, and if so, which one(s).

The following table (Table 2) shows the annualized volatility and returns of each index over different time horizons (1 year, 3 years, 5 years and 8 years), and the calculated Sharpe ratio based on these variables. The Sharpe ratio also needs the risk free rate for calculation, and this study uses the average LIBOR rates over different periods based on the different time horizons for which the Sharpe ratio is computed (see Table 1 in section 2.2.2).

**Table 2 - Sharpe ratio table**

	1 year Sharpe ratio			3 year Sharpe ratio		
	Annualized return	Annualized volatility	Sharpe ratio	Annualized return	Annualized volatility	Sharpe ratio
<b>Sri Lanka</b>	7.78%	13.65%	0.48	-4.01%	15.85%	<b>-0.30</b>
<b>Vietnam</b>	64.86%	14.27%	<b>4.46</b>	12.88%	19.28%	0.63
<b>Bangladesh</b>	17.45%	13.72%	1.18	1.52%	13.59%	0.05
<b>Frontier Markets</b>	32.03%	8.18%	<b>3.76</b>	4.96%	9.41%	0.44
<b>Emerging Markets</b>	37.35%	11.08%	<b>3.26</b>	9.10%	17.26%	0.48
<b>World</b>	22.27%	6.82%	<b>3.08</b>	9.26%	13.12%	0.65

	5 year Sharpe ratio			Historical Sharpe ratio (8 years)		
	Annualized return	Annualized volatility	Sharpe ratio	Annualized return	Annualized volatility	Sharpe ratio
<b>Sri Lanka</b>	3.59%	16.68%	0.18	7.34%	17.59%	0.39
<b>Vietnam</b>	10.23%	20.86%	0.46	3.54%	23.73%	0.13
<b>Bangladesh</b>	10.97%	17.73%	0.59	2.56%	27.97%	0.07
<b>Frontier Markets</b>	9.27%	9.98%	0.87	6.90%	10.18%	0.63
<b>Emerging Markets</b>	4.34%	16.24%	0.23	4.47%	18.56%	0.21
<b>World</b>	11.64%	12.40%	0.89	9.85%	15.89%	0.59

Source: author's calculation on data provided by MSCI (daily prices on each index)

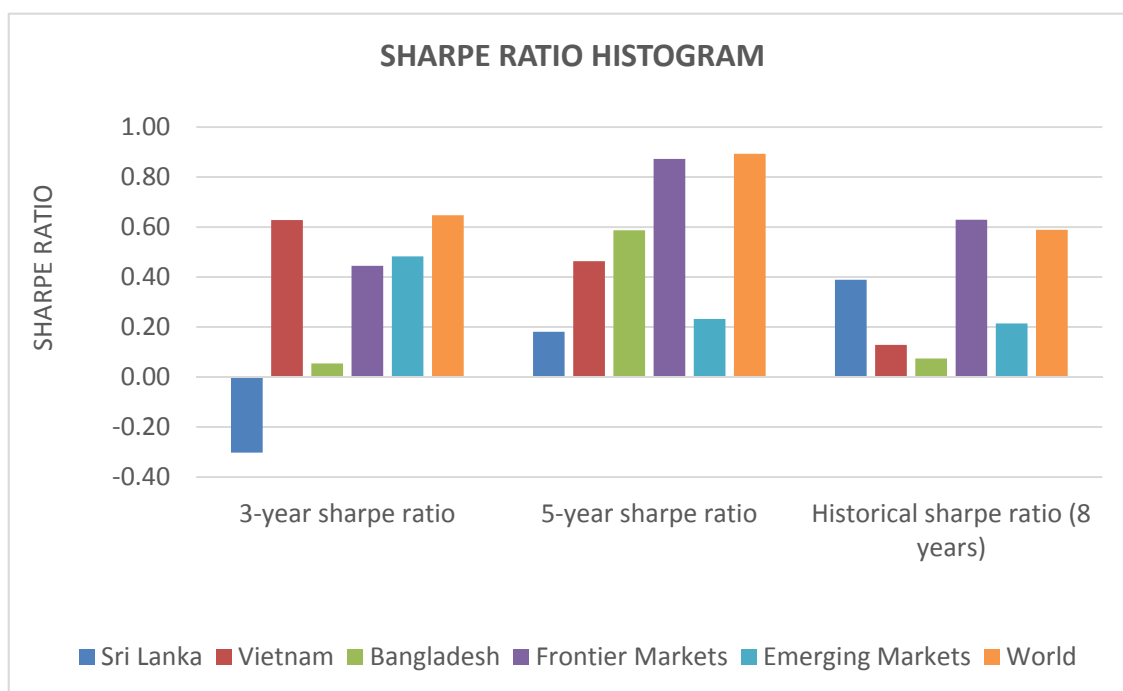
The markets have performed incredibly well in 2017, volatility remained relatively low and interest rates have been very low as well. As a result, the Sharpe ratios for 2017 are outstanding. Sharpe ratios are considered to be excellent when the value it returns is higher than 1, and here, the MSCI Frontier Markets Index, MSCI Emerging Markets Index as well as the MSCI World Index are returning values above 3. This is highly unusual, Sharpe ratios hardly ever exceed 1.5. These Sharpe ratios are the best there has been since the period before the 2008 crisis.

Vietnam has returned the highest Sharpe ratio of all in 2017. In 2017, investments in Vietnam have generated 4.46 units of excess return (return net of risk free rate) per unit of risk, which is extraordinary.

However, investments in Sri Lanka haven't had much better returns in 2017 as in other periods, even though there is a slight improvement in comparison. The MSCI Bangladesh Index has had an excellent risk-adjusted performance, but not as good as Vietnam and other indices (except Sri Lanka, which performed rather poorly in comparison to all others).

For other periods, the Sharpe ratios are at a more usual level, and a graphical representation allows better comparison.

**Figure 11 - Sharpe ratio histogram comparison of different indices**



Source: author's calculation on data provided by MSCI (daily prices on each index)

This histogram (Figure 11) shows the Sharpe ratios of each index over 3 years, 5 years and 8 years. The MSCI World Index is the most performing index when performance is adjusted to the risk over all periods.

The 3-year Sharpe ratio shows an interesting difference between the 3 Asian frontier markets. Sri Lanka reveals a negative Sharpe ratio (-0.30), which means that returns do not compensate the risk as well as the time-value of money (risk free rate), while Vietnam, in the contrary, shows a rather good Sharpe ratio (0.63). It is higher than emerging markets and other frontier markets, thanks to the sharp increase in the index during the second half of 2017 (see Figure 10), which is higher than the change in volatility in the same period (see Figure 5), and compensates the risk free rate as well, which is around 0.5% in 2017, as per Table 1, in section 2.2.2).

Bangladesh's Sharpe ratio is not good (0.05), without being negative. This means that returns compensate the time-value of the money invested and the average risk this investment represents, but it was barely worth investing in Bangladesh these last 3 years.

5-year Sharpe ratios are all positive, very good for developed markets, good for frontier markets in general, but for Vietnam and Sri Lanka, the ratio is below 0.5. Bangladesh has a 5-year Sharpe ratio of 0.59, which is rather good.

Asian frontier markets in general weren't such good investments for the last 5 years, compared to other frontier markets. Sri Lanka's 5-year Sharpe ratio is rather disappointing (0.18), even though it isn't negative like the 3-year Sharpe ratio.

Overall, except for Vietnam in the 3-year Sharpe ratio histogram comparison, the MSCI Frontier Markets Index performs better than individual Asian frontier markets, and the MSCI World Index even better. As far as emerging markets are concerned, they have become more performing than frontier markets in the last 3 years, but when considering a longer period, the MSCI Frontier Markets Index has shown better results in terms of risk-adjusted performance.

**Sri Lanka** : In addition to returning a negative Sharpe ratio in a 3-year period analysis (-0.30) and still a low Sharpe ratio in a 5-year period analysis (0.18), Sri Lanka has not reached a higher Sharpe ratio than 0.48 in 2017, even though the market has been very bullish, which had consequences on all other indices.

This leads to the conclusion that Sri Lanka's risk adjusted performance has not been interesting for the past 5 years, even if it seemed to be the best performing Asian frontier market when considering the value of the index and the historical (8-year) Sharpe ratio.

**Vietnam** : Regardless of the defined period, Vietnam has always returned a positive Sharpe ratio, and as the period gets shortened close to the present, the Sharpe ratio is more and more positive, which is an indicator that Vietnam is a good investment today. It is the Asian frontier market that has the best Sharpe ratio in 2017, which could mean that this country benefits more from the overseas bullish markets than its peers, Bangladesh and Sri Lanka.

The volatility of investments in Vietnam has been decreasing, and returns have recently been sharply increasing, this results in a double positive impact on the sharp ratio. Vietnam has the best risk-adjusted performance among Asian frontier markets, and seems to have the best potential, given the recent increase in the value of the index.

**Bangladesh** : Bangladesh is the only Asian frontier market to return a negative Sharpe ratio over 8 years: its annualized returns have been weak in comparison with other indices, and its annualized volatilities were almost as high as for other regions and indices. However, the situation is changing in 2017, returns are rather high and volatility is low, which reveals a Sharpe ratio of 1.18 in 2017, which is excellent, even though it isn't as high as that for Vietnam, and other large indices (MSCI Frontier Markets Index, MSCI Emerging Markets Index and MSCI World Index).

The risk-adjusted performance for Bangladesh might be on its way for improvement, but overall, Bangladesh has been a disappointing investment over the last 8 years.

Asian frontier markets generally don't return higher Sharpe ratios than the MSCI Frontier Markets Index, which means they aren't better investments than other frontier markets, and they do not consistently return higher Sharpe ratios than emerging markets either.

## 2.4 Correlation and diversification potential

One of the big advantage of frontier markets, is that they present attractive correlation characteristics to diversify investments portfolios, which diminishes the overall risk of the portfolio. Due to the rising correlation between asset classes, frontier markets investments are seen as a new opportunity for diversification, and this is the main reason investors consider to add them to their portfolio: they hope to reduce risk by combining frontier markets equity investments to investments in other asset classes, such as fixed income, cash equivalents, real estate and commodities investments.

Researches have shown that correlation is low between frontier equities and other asset classes, but this section studies the correlation between the different MSCI indices discussed until now (Frontier Markets, Emerging Markets, World, Bangladesh, Sri Lanka and Vietnam), to find out whether there is a diversification potential between these different equity markets, and between individual frontier markets' equities.

In section 2.3, correlation between the studied indices has been discussed superficially based on visual representations of the curves. Here, the correlation coefficients have been computed based on MSCI daily index prices, and reported on the table below (Table 3).

**Table 3 – Correlation coefficients between the different MSCI indices  
(2010-2017)**

	CORRELATION COEFFICIENTS					
	Sri Lanka	Vietnam	Bangladesh	Frontier Markets	Emerging Markets	World
Sri Lanka	1.00000					
Vietnam	0.18192	1.00000				
Bangladesh	0.17015	0.55079	1.00000			
Frontier Markets	0.80588	0.35570	0.24529	1.00000		
Emerging Markets	0.51037	0.45650	0.13985	0.59111	1.00000	
World	0.73507	0.05294	0.08273	0.84472	0.43730	1.00000

Source: author's calculation on data provided by MSCI (daily prices on each index)

All correlation coefficients reported on Table 3 show positive correlation, which means that indices have a tendency to move in the same direction. The smaller the correlation coefficient, the larger the potential for diversification potential.

The main information to capture for this table (Table 3) is the following:

- The MSCI Sri Lanka Index has a closer correlation with the main indices (MSCI Frontier Markets Index, MSCI Emerging Markets Index and MSCI World Index) than Vietnam and Bangladesh, which show the lowest correlation of all with developed markets.
- There is very low correlation between Asian frontier markets
- Frontier markets show higher correlation to developed markets than emerging markets.

The fact that there is more correlation between frontier markets and developed markets than between emerging and developed ones can be explained by the fact that frontier countries rely more on investments from foreign investors, most of which are coming from developed countries. Emerging countries are less dependent on developed markets' performance, and this reflects in Table 3.

Asian frontier markets shows very low correlation to one another, meaning that the index's performance is not affected by the same events, or at least not in the same way. The performance of Sri Lanka doesn't depend on the performance of the Vietnamese or Bangladeshi market, and vice-versa. Vietnam and Bangladesh have a higher level of correlation though.

This is an interesting point, because it shows that by adding not only one frontier market into an investment portfolio, risk can be mitigated. This is especially true when Sri Lanka is part of the portfolio, due to lower correlation characteristics.

In the contrary, Sri Lanka has more correlation with emerging and developed markets and other frontier markets (excluding Bangladesh and Vietnam), so in order to diversify a portfolio of equity investments in these markets, Sri Lanka not as good of a choice as Vietnam or Bangladesh.

Investors in search for diversification opportunities need to match the markets in which they intend to invest with the needs of their investment portfolios, but in general, frontier markets present good correlation characteristics to do so.

## Chapter 3

### 3. Discussions

#### 3.1 Risks versus returns

This research has shown that returns in frontier markets' equities are not consistently higher than that for emerging and developed markets, and Asian frontier markets are not an exception to that. They do not perform better than emerging and developed markets, but also not consistently better than other frontier markets. But overall, historical returns from 2010 to 2017 in individual Asian frontier markets have been positive and reasonable in comparison to other markets.

When comparing Asian frontier markets to one another, Sri Lanka's performance over 8 years has been better than that for Vietnam and Bangladesh, but recently, returns from investments in Sri Lankan equities have been disappointing in comparison with other Asian frontier markets.

In 2017, all indices for equity markets have returned outstanding performance, and Vietnam's stock market was the one to benefit the most from this, returning a performance of almost 65% from January 1<sup>st</sup> to December 31<sup>st</sup> 2017. This ability to take advantage of the global bullish trend, probably combined with good internal growth, is a very interesting attribute for investors.

As far as risks are concerned, this study focuses on average and extreme risks in the analysis part (Chapter 2), but all the risks described in section 1.4 must be taken into account when evaluating the level of risk, especially in frontier markets.

So although volatility remains reasonable in Asian frontier markets in comparison to other MSCI indices discussed in this research, it is important to remember that volatility is affected by the illiquidity of frontier equities. The volume of frontier equities traded is rather low, because investing in these markets is still rather uncommon, and this prevents investors to trade as often as in more developed market. Volatility is also artificially lower than it should be, because the indices used are traded in US dollars instead of local currency, which creates a currency effect that lowers the actual volatility.

The illiquidity of the market and the currency effect make risks hard to evaluate in frontier markets in general, but there is also a lack of transparency which makes the markets even less predictable than they seem to be.



However, in section 1.4, this study has revealed that there is more trade volume in Asian frontier markets, probably because investors see in Vietnam, Sri Lanka and Bangladesh what there was in China and India 20-30 years ago. This could mean that volatility is artificially higher in Asian frontier markets than in some others, due to the higher trade volume.

When it comes to extreme risks, this study has shown that Asian frontier markets have larger drawdowns than other frontier, emerging and developed markets. Bangladesh still hasn't recovered from its max drawdown in January 2012, which shows that not only drawdown are larger, but the time to recovery is longer.

The fact that these countries experience largest drawdowns than emerging and developed markets is mainly due to the fact that there is low liquidity of the market, so when the market is bad, investors can't find a counterparty willing to buy the stocks so easily, so the prices continue to fall for a longer period, which results in larger drawdowns.

Concerning the difference in drawdowns between frontier markets in general and Asian frontier markets, this can be attributed to the fact that the MSCI Frontier Markets Index includes many different countries with low correlation to one another, so they can cancel out each other's results, which artificially decreases the overall risk of the index, returning not only lower volatility, but also lower drawdowns: some frontier equities keep on registering positive returns, while other are experiencing their max drawdown. This is exactly why it is important to analyze Asian frontier markets' opportunities and risks on an individual basis.

Overall, performance is not higher in Asian frontier markets than in other frontier, emerging and developing markets, but the overall risk is higher. This is sufficient evidence to conclude that frontier markets are not worth investing today based on historical data. To support this, the Sharpe ratio clearly shows rather unsatisfying results for Asian frontier markets whether is it computed on the last 8, 5 or 3 years.

However, the 1-year sharp ratio of Vietnam is exceptionally high, due to low volatility, outstanding performance and low interest rates, but for Sri Lanka and Bangladesh, the ratio is not promising.

Vietnam might continue with this outstanding performance and attract more and more investments in the future, but there are better chances that this is only a 1-year thing, given that the country still has lots of challenges to overcome in order to foster sustainable economic growth. 2017 was a special year, and most markets have returned

an outstanding Sharpe ratio as well (including MSCI's frontier, emerging and developed market indices).

Even though they aren't worth investing when comparing risks and returns, Asian frontier markets show attractive correlation characteristics, which help mitigate the overall risk of an investment portfolio. Vietnam and Bangladesh show the least correlation with emerging and developed markets, which makes them good tools to diversify a portfolio of equities from developed and emerging countries.

## 3.2 Recommendations

The findings of this study suggests that it isn't profitable to invest in Asian frontier markets based on historical data of these last 8 years. Although they present high growth prospects, the risks are too heavy compared to the potential returns. However, growth is expected to speed up in the next decade and risks are expected to diminish as well.

For long-term investors, it might be a good time to invest in Asian frontier markets. For short to medium term investors, investments in these countries might take too much time before becoming profitable, it can be challenging to exit the market in bad times due to its illiquidity and average as well as extreme risks are too high, especially for investors who don't intend to monitor their investments closely.

Asian frontier markets are good diversification tools for investors who need to diminish the overall risk of their investment portfolio, since they have very low correlation with other types of equity markets, especially Bangladesh and Vietnam.

**Vietnam** : Even though risks are still high, returns in Vietnam have been particularly spectacular, which suggests that Vietnam was actually a very good investment, even for shorter-term investors in 2017. But how sustainable will be this growth? 2017 was an exceptional year for all indices, and the Vietnamese stock market has responded particularly well to this bullish trend. After December 31<sup>st</sup> 2017, the Vietnam Ho Chi Minh Stock Index kept on increasing until April 2018, registering a 22.9% increase from its value at the end of 2017, before falling back to a value representing 95% of the index's value as of December 31<sup>st</sup> 2017.

It is reasonable to conclude that this growth wasn't sustainable, and simply a spill-over effect of particularly good conditions of the global market in 2017 and early 2018. Today, Vietnam is not as much of a good investment as it was last year until April 2018.

**Bangladesh:** The Bangladesh stock market price has sharply decreased since December 31<sup>st</sup> 2017, a decrease that represented a loss of 13.3% at the end of May 2018. Bangladesh has not been a good investment either since the start of 2018.

**Sri Lanka :** Sri Lanka's stock market price hasn't changed much from the end of 2017, experiencing an increase of 1% only by the end of May 2018. This stock market either, hasn't shown particularly good performance since the beginning of 2018.

This study recommends investors not to invest in Asian frontier markets for now, except if investors are ready to commit for the long-run and monitor their investments closely or if they are in need to diversify their investment portfolio.

Out of the 3 Asian frontier countries, Vietnam seems to be the one whose stock market has the highest potential: high returns, low volatility, a more advanced stage of development, and softer barriers and challenges to overcome. There were even discussions on whether it should become part of the MSCI Emerging Markets Index last year (2017), before the sharp increase in the index value, which shows that investors are more confident in Vietnam's development and stock market performance than in Bangladesh and Sri Lanka's.

Investments in Sri Lankan equities seem to be the least profitable option based on this analysis, and the country still has many challenges to overcome. Its precarious debt situation refrains Sri Lanka from developing, because of the lack of investment in public services. This is the main reason why its stock market value has been stagnating over the last years.

Bangladesh show more potential than Sri Lanka at the moment, but this analysis revealed that investing in Bangladeshi equities may not be so profitable based on historical data.

## Conclusion

Frontier markets are also called “emerging-emerging markets”, which emphasizes the idea that they are the emerging markets of tomorrow. Indeed, frontier markets are currently developing in the same way that emerging markets were 20-30 years ago, and this is why they are expected to follow the same developments in the future as well.

A large difference that could impact frontier markets’ development is the larger number of investments that they attract compared to how much investments the current emerging markets used to attract when they were in the same stage of development: investing in frontier markets is a rather new practice for investors, and a large amount of foreign investments in frontier equities could boost performance in the long-term.

However, even though higher risks usually means higher returns, frontier markets have performed quite poorly in comparison with less risky investments, such as developed and emerging markets’ equities. For Asian frontier markets, this is even more the case, since they consistently have higher volatility and unimpressive returns.

As a result, investors are still very reluctant to invest in these countries, even though they have a promising future ahead, and this study has shown that this reluctance is grounded. For short to medium term investors, and based on historical data, it is not worth investing in Asian frontier countries. For this type of investors, the attractive correlation characteristics is a better argument for investing in Asian frontier markets than performance.

For long-term investors, however, Asian frontier countries are a good bet: continued economic growth, favourable demographics, a burgeoning middle class and a maturing industry delivering positive net cash flows to its investors all point to major long-term growth. In addition, risks in Asian frontier markets have been declining over the last 8 years, a trend that could continue in the future.

Frontier markets are the emerging markets of the future, and with China and India as a model of growth, Asian frontier countries are well placed to follow their track. Therefore, investors should continue paying attention to Asian frontier markets and following their development closely.

## Bibliography

1. China Free Trade Agreements, 2015. [online]. [Viewed 29 March 2018]. Available from: [http://www.china.org.cn/business/node\\_7233287.htm](http://www.china.org.cn/business/node_7233287.htm)
2. ANDERSON, Ashlyn and AYRES, Alyssa, 2015. Economics of Influence: China and India in South Asia. Council on Foreign Relations [online]. 3 August 2015. [Viewed 29 March 2018]. Available from: <https://www.cfr.org/expert-brief/economics-influence-china-and-india-south-asia>
3. BELL, Olivier, 2014. Frontier Markets: Asia rising. T. Rowe Price [online]. November 2014 [Viewed 29 March 2018]. Available from: [https://www2.troweprice.com/rms/rps/Marketing/Assets/Frontier\\_Markets\\_-\\_Asia\\_Rising.pdf](https://www2.troweprice.com/rms/rps/Marketing/Assets/Frontier_Markets_-_Asia_Rising.pdf)
4. MEN, Jing, 2007. The Construction of the China–ASEAN Free Trade Area: A Study of China’s Active Involvement. Global Society. 1 April 2007. Vol. 21, no. 2, p. 249–268. DOI 10.1080/13600820701201954.
5. WALL, Emma, 2017. What is a Frontier Market? Morningstar UK [online]. 10 July 2017. [Viewed 31 March 2018]. Available from: <http://www.morningstar.co.uk/uk/news/131262/what-is-a-frontier-market.aspx>
6. What is the difference between a developed, emerging, and frontier market? - Nasdaq, 2012. [online]. 11 May 2012 [Viewed 31 March 2018]. Available from: <https://www.nasdaq.com/article/what-is-the-difference-between-a-developed-emerging-and-frontier-market-cm140649>
7. AMADEO, Kimberly, 2018. What Does an MSCI Index Track? The Balance [online]. [Viewed 7 April 2018]. Available from: <https://www.thebalance.com/msci-index-what-is-it-and-what-does-it-measure-3305948>
8. AKTER, SHAMEMA, 2013. History of Economic Development of Bangladesh. [online]. [Viewed 7 April 2018]. Available from: <http://bea-bd.org/site/images/pdf/014.pdf>
9. Bangladesh profile, 2014. BBC News [online]. [Viewed 7 April 2018]. Available from: <https://www.bbc.com/news/world-south-asia-12650944>

10. CHOWDHURY, Anir, 2017. A tech revolution helps boost Bangladesh's development. End Poverty in South Asia [online]. 8 October 2017. [Viewed 7 April 2018]. Available from: <http://blogs.worldbank.org/endpovertyinsouthasia/tech-revolution-helps-boost-bangladesh-s-development>
11. About Sri Lanka, 2016. UNDP in Sri Lanka [online]. [Viewed 12 April 2018]. Available from: <http://www.lk.undp.org/content/srilanka/en/home/countryinfo.html>
12. MAHR, Krista and MIGLANI, Sanjeev, 2015. India seals nuclear energy pact with Sri Lanka, hopes to push back Chinese influence. [online]. 16 February 2015. [Viewed 12 April 2018]. Available from: <http://news.yahoo.com/india-seals-nuclear-energy-pact-sri-lanka-hopes-113600113.html>
13. India - Sri Lanka Relations, 2017. [online]. November 2017 [Viewed 12 April 2018]. Available from: [http://www.mea.gov.in/Portal/ForeignRelation/Sri\\_Lanka\\_November\\_2017\\_NEW.pdf](http://www.mea.gov.in/Portal/ForeignRelation/Sri_Lanka_November_2017_NEW.pdf)
14. BAJORIA, Jayshree, 2009. The Sri Lankan Conflict. Council on Foreign Relations [online]. 18 May 2009 [Viewed 12 April 2018]. Available from: <https://www.cfr.org/backgrounder/sri-lankan-conflict>
15. WICKRAMASINGHE, D. W. Ananda and CAMERON, D. C. British capital, Ceylonese land, Indian labour: The imperialism and colonialism of evolution of tea plantations in Sri Lanka. [online] [Viewed 12 April 2018]. Available from: <http://mngt.waikato.ac.nz/ejrot/cmsconference/2005/proceedings/managementorganizational/Wickramasinghe.pdf>
16. History of Vietnam - Lonely Planet Travel Information. [online]. [Viewed 14 April 2018]. Available from: <https://www.lonelyplanet.com/vietnam/history>
17. The evolution of frontier markets, 2017. Aberdeen [online]. [Viewed 14 April 2018]. Available from: [http://www.aberdeen-asset.ch/file\\_source/documents/2dbf2b5b-050c-47e7-9fc0-102b4b2a4b91/2/30876-cd-the-evolution-of-frontier-markets-wp\\_unif\\_march-2017.pdf](http://www.aberdeen-asset.ch/file_source/documents/2dbf2b5b-050c-47e7-9fc0-102b4b2a4b91/2/30876-cd-the-evolution-of-frontier-markets-wp_unif_march-2017.pdf)
18. Frontier markets know the opportunities and risks. Assessing the risks. [online]. [Viewed 15 April 2018]. Available from: [https://www.ey.com/US/en/Industries/Financial-Services/Asset-Management/Frontier-markets-know-the-opportunities-and-risks\\_Assessing-the-risks](https://www.ey.com/US/en/Industries/Financial-Services/Asset-Management/Frontier-markets-know-the-opportunities-and-risks_Assessing-the-risks)

19. Investing In Frontier Markets, 2017. Lazard Asset Management [online]. 17 October 2017. [Viewed 5 May 2018]. Available from:  
[https://www.lazardassetmanagement.com/docs/-sp17-/20858/InvestingInFrontierMarkets-A\\_LazardInvestmentFocus\\_en.pdf](https://www.lazardassetmanagement.com/docs/-sp17-/20858/InvestingInFrontierMarkets-A_LazardInvestmentFocus_en.pdf)
20. Frontier Markets: Accessing the next frontier, 2014. FTSE Russell. [online]. September 2014 [Viewed 5 May 2018]. Available from:  
[http://www.ftse.com/products/downloads/FTSE\\_Frontier\\_Markets\\_Overview.pdf](http://www.ftse.com/products/downloads/FTSE_Frontier_Markets_Overview.pdf)
21. MARSHALL, Ben R., NGUYEN, Nhut H. and VISALTANACHOTI, Nuttawat, 2011. Frontier market transaction costs and diversification. [online]. 26 October 2011. [Viewed 5 May 2018]. Available from:  
<https://www.nzfc.ac.nz/archives/2012/papers/updated/11.pdf>
22. MINIAOU, Geraldine, 2017. Investing in Frontier Markets equity. Pavilion Advisory Group. [online]. [Viewed 6 May 2018] <https://www.pavilioncorp.com/wp-content/uploads/2018/03/Frontier-Markets-Q1-2018.pdf>
23. SENAY, Rahwa, 2017. Introduction to Frontier Markets [online]. 14 September 2017. [Viewed 14 May 2018]. Available from:  
<http://www.lazardnet.com/docs/sp0/19582/IntroductionToFrontierMarkets>
24. The World Factbook, 2017. Central Intelligence Agency. [online]. [Viewed 11 May 2018]. Available from: <https://www.cia.gov/library/publications/the-world-factbook/fields/2177.html>
25. Frontier Markets: Where will you be invested in three years?, 2017. Tundra Fonder. [online]. [Viewed 12 May 2018]. Available from: <http://www.tundrafonder.se/wp-content/uploads/2017/06/Frontier-Markets-Where-will-you-be-invested-in-three-years.pdf>
26. Bangladesh Natural Disaster Profile, 2004. The Earth Institute, Columbia University. [Viewed 14 May 2018]. Available from:  
[https://www.ldeo.columbia.edu/chrr/research/profiles/pdfs/bangladesh\\_profile1.pdf](https://www.ldeo.columbia.edu/chrr/research/profiles/pdfs/bangladesh_profile1.pdf)
27. Doing Business in Bangladesh - World Bank Group, 2018. [online]. [Viewed 13 May 2018]. Available from:  
<http://www.doingbusiness.org/data/exploreeconomies/bangladesh>
28. JAHAN, Rounaq, 2014. Political parties in Bangladesh. CMI [online]. [Viewed 14 May 2018]. Available from: <https://www.cmi.no/publications/file/5229-political-parties-in-bangladesh.pdf>

29. Hazard Profile of Sri Lanka, 2005. [online]. Ministry of Disaster Management [Viewed 15 May 2018]. Available from:  
[http://www.disastermin.gov.lk/web/index.php?option=com\\_content&view=article&id=57%3Ahazard-profile-of-sri-lanka&catid=73%3Areports&Itemid=70&lang=en](http://www.disastermin.gov.lk/web/index.php?option=com_content&view=article&id=57%3Ahazard-profile-of-sri-lanka&catid=73%3Areports&Itemid=70&lang=en)
30. Overview, 2018. World Bank in Sri Lanka [online]. 12 April 2018 [Viewed 15 May 2018]. Available from:  
<http://www.worldbank.org/en/country/srilanka/overview>
31. Sri Lanka Country Report: Risk Analyses by EH Economic Research, 2017. [online]. 21 September 2017 [Viewed 15 May 2018]. Available from:  
<http://www.eulerhermes.com/economic-research/country-reports/Pages/sri-lanka.aspx>
32. Overview, 2018. World Bank in Vietnam [online]. 19 April 2018 [Viewed 15 May 2018]. Available from:  
<http://www.worldbank.org/en/country/vietnam/overview>
33. Viet Nam / Economic Studies - Coface, 2018. [online]. January 2018 [Viewed 15 May 2018]. Available from: <http://www.coface.com/Economic-Studies-and-Country-Risks/Viet-Nam>
34. Emerging market status a no-go in 2018, 2018. Việt Nam News [online]. 29 January 2018. [Viewed 15 May 2018]. Available from:  
<http://vietnamnews.vn/economy/422026/emerging-market-status-a-no-go-in-2018.html>
35. Vietnam Country Economy: Risk Analyses by EH Economic Research, 2017. [online]. 12 January 2017 [Viewed 15 May 2018]. Available from:  
<http://www.eulerhermes.com/economic-research/country-reports/Pages/Vietnam.aspx>
36. A future worth investing in, 2018. Dhaka Tribune [online]. [Viewed 17 May 2018]. Available from: <http://www.dhakatribune.com/opinion/editorial/2018/05/14/a-future-worth-investing-in>
37. BUI, Gwenegan and GUILLET, Jean-Jacques, 2015. Rapport d'information sur les Emergents d'Asie du Sud-Est. Assemblée nationale. [online]. [Viewed 17 May 2018]. Available from: <http://www.assemblee-nationale.fr/14/rap-info/i2548.asp>



38. Frontier Markets: The New Emerging Emerging Market, 2007. The Dough Roller [online]. [Viewed 17 May 2018]. Available from: <https://www.doughroller.net/investing/frontier-markets-to-boldly-go-where-few-investors-have-gone-before/>
39. MOINUDDIN, Mustafa, 2013. Economic integration and trade liberalization in South Asia. Asia Pathways [online]. 27 August 2013. [Viewed 19 May 2018]. Available from: <https://www.asiapathways-adbi.org/2013/08/economic-integration-and-trade-liberalization-in-south-asia/>
40. Sri Lanka GDP Growth Rate, 2018. [online]. [Viewed 19 May 2018]. Available from: <https://tradingeconomics.com/sri-lanka/gdp-growth>

## Appendix 1: Different classifications of frontier countries

Classification of Frontier Countries					Unclassified or Off-Benchmark Countries but with Market Cap from the World Bank		
Country	MSCI	S&P	FTSE	Russell			
Argentina					Armenia	Georgia	Nepal
Bahrain					Barbados	Guyana	Paraguay
Bangladesh					Bolivia	Iran	Saudi Arabia
Bosnia and Herzegovina					Costa Rica	Kyrgyz Republic	Uganda
Botswana					El Salvador	Malawi	Uruguay
Bulgaria					Fiji	Mongolia	Venezuela
Côte d'Ivoire					FYR Macedonia	Montenegro	Zimbabwe
Croatia							
Cyprus							
Ecuador							
Egypt							
Estonia							
Gabon							
Ghana							
Jamaica							
Jordan							
Kazakhstan							
Kenya							
Kuwait							
Latvia							
Lebanon							
Lithuania							
Malta							
Mauritius							
Morocco							
Namibia							
Nigeria							
Oman							
Pakistan							
Panama							
Papua New Guinea							
Qatar							
Romania							
Senegal							
Serbia							
Slovak Republic							
Slovenia							
Sri Lanka							
Tanzania							
Trinidad and Tobago							
Tunisia							
Ukraine							
Vietnam							
Zambia							
<b>Total</b>	<b>24</b>	<b>34</b>	<b>21</b>	<b>39</b>			

Summary	
Frontier	44
Off Benchmark	21
<b>Total</b>	<b>65</b>

As of 30 June 2015 (Russell data as of March 2015)  
Source: FTSE, IMF, MSCI, Russell, Standard & Poor's, World Bank

Source: MSCI 2017

## Appendix 2: MSCI Market Classification Criteria

Criteria	Frontier	Emerging	Developed
A Economic Development			
A.1 Sustainability of economic development	No requirement	No requirement	Country GNI per capita 25% above the World Bank high income threshold* for 3 consecutive years
B Size and Liquidity Requirements			
B.1 Number of companies meeting the following Standard Index criteria Company size (full market cap) ** Security size (float market cap) ** Security liquidity	2 USD 630 mm USD 49 mm 2.5% ATVR	3 USD 1260 mm USD 630 mm 15% ATVR	5 USD 2519 mm USD 1260 mm 20% ATVR
C Market Accessibility Criteria			
C.1 Openness to foreign ownership C.2 Ease of capital inflows / outflows C.3 Efficiency of the operational framework C.4 Stability of the institutional framework	At least some At least partial Modest Modest	Significant Significant Good and tested Modest	Very high Very high Very high Very high

\* High income threshold for 2012: GNI per capita of USD 12,615 (World Bank, Atlas method)

\*\* Minimum in use for the May 2014 Semi-Annual Index Review, updated on a semi-annual basis

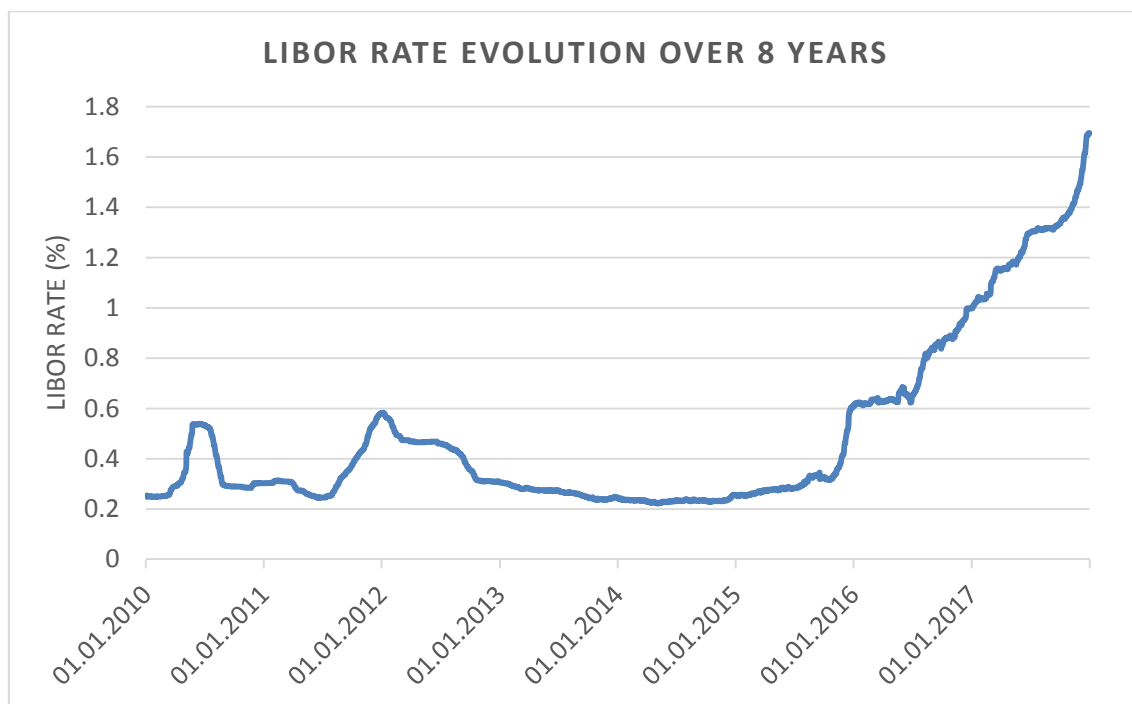
Source: MSCI 2017

## Appendix 3: Frontier markets total trade volume 2010-2017

<b>MSCI frontier market</b>	<b>567'953'384'189</b>	<b>100.00%</b>
Vietnam	17'758'677'604	<b>3.13%</b>
Bangladesh	9'206'428'142	<b>1.62%</b>
Sri Lanka	4'552'001'738	<b>0.80%</b>
Morocco	930'837'831	0.16%
Argentina	1'124'520'563	0.20%
Tunisia	70'111'807	0.01%
Bahrain	6'545'333'684	1.15%
Jordan	217'890'617	0.04%
<b>Kenya</b>	<b>36'427'847'048</b>	<b>6.41%</b>
Slovenia	23'764'390	0.00%
Serbia	36'576'329	0.01%
Romania	16'126'440'750	2.84%
Oman	6'741'062'670	1.19%
<b>Nigeria</b>	<b>254'580'411'046</b>	<b>44.82%</b>
Mauritius	13'011'301'868	2.29%
Kazakhstan	935'351'361	0.16%
Lithuania	332'890'551	0.06%
Lebanon	431'672'994	0.08%
<b>Kuwait</b>	<b>32'760'467'531</b>	<b>5.77%</b>
Croatia	36'899'374	0.01%
Estonia	545'999'719	0.10%
<b>WAEMU (8 countries)</b>	<b>165'556'896'572</b>	<b>29.15%</b>

Source: author's calculation on data provided by Bloomberg

## Appendix 4: Historical LIBOR rate 2010-2017



Source: author's calculation on data provided by Bloomberg